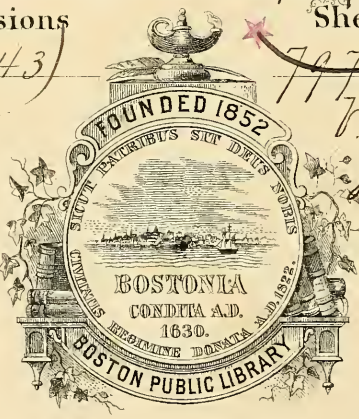
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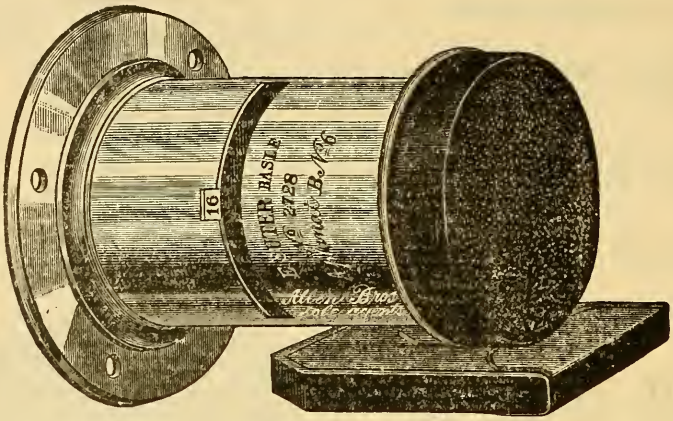
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I expect to make some very fine work with my No. 6.

Truly yours,

(Signed) WILL. A. TRIPLETT.

Copy of Letter from W. KNOWLTON, Photographer, Studio, 335 Fourth Ave., New York, to Messrs. ALLEN BROS., Detroit, Mich.

NEW YORK, November 23, 1887.

ALLEN BROS.

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(Signed) W. KNOWLTON.

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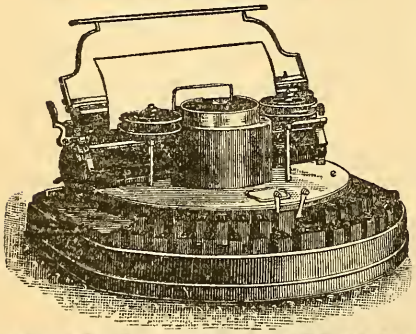
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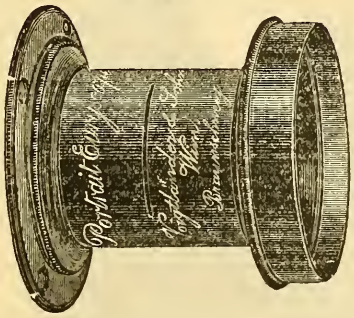
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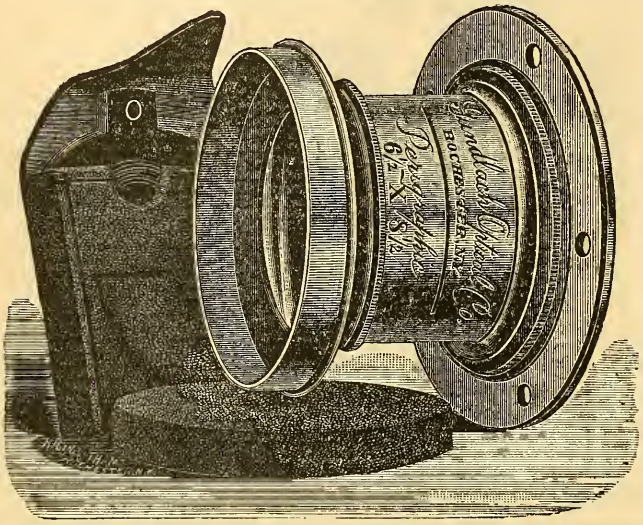
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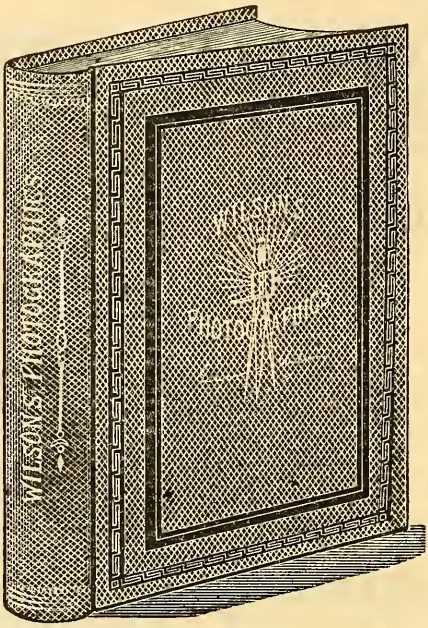
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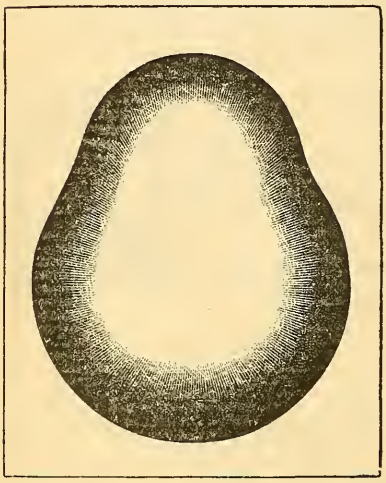
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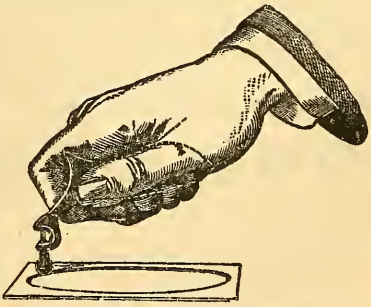
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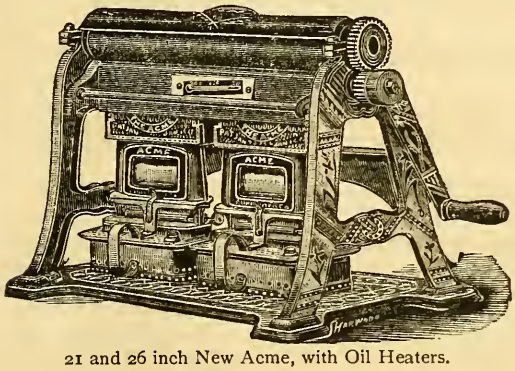
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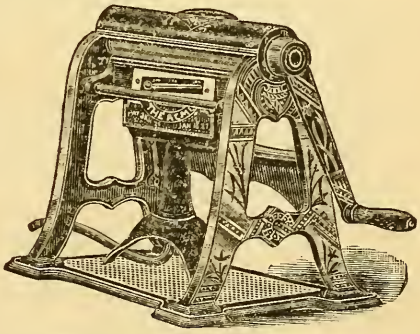
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BREATH AND BREADTH.

Nov. 21. 1888

THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. JULY 7, 1888. No. 325.

PERTAINING TO THE



The Minneapolis Convention.—We issue our current number one week in advance of the regular day (though dated correctly) in order to say one last word concerning the coming convention at Minneapolis. We have a stronghold of subscribers in the West and Northwest. The pioneers took our magazine with them when they followed the advice of Horace Greeley, and they have been receiving it ever since. As a rule, they are men and women who have prospered moderately. They take an earnest view of life, and hold an exalted opinion of the wonderful art of photography. Undoubtedly a number of them will be present at the coming Convention. So for, and in their behalf, we call upon the officers in charge to provide something for their good and permanent welfare. They do not, as a rule, spend their money for "a good time," which, in the general acceptance of the term, simply means an "outing," or a prolonged excursion. Such things can be had nearer home for much less expense of time and money. They do not come to see trapeze acting on parliamentary queries, nor ground and lofty tumbling about impracticable "insurance" and "benefit" schemes which can never serve them, for all such matters have been settled for their better advantage by men wise in such things. They do not come to listen to the blood-curdling noise nor to catch the spurt of dirty water which comes from private axe grinding, for nearly every one of them prefers to take his daily ration of such things within the privacy of his own little personal wood-shed, or in the neighborhood of his own family wood-pile. But they do come to be informed and helped; to hear the matters which perplex them discussed; to see the practices which will advance them demonstrated, and for the chance to inquire concerning the things which are not clear to them. It is the function of the Association to provide all this, first and above everything else. Scarce a measure of business ever comes up of sufficient importance to occupy the sessions of the Convention. The Executive Committee is empowered to attend to such matters. Let it attend to them, and save the time of hundreds of attendants who would fill the meetings if what they come for is provided.

The prime motive of the P. A. of A. should be, if it is not, educational. Photography is not the world, though we believe the mighty camera is bound to take in all the world, sooner or later. And since photography is not the world, and all its votaries crowded together would make a

very little spot upon it, therefore it is not wise to depart too far from the specialty which it understands, and try to meddle with matters which it does not understand—matters which belong entirely to another craft of specialists, educated and skilled in their particular line. Without going into details, obtained by actual counsel with those wise in such things, we suggest that our craft, has not the elements within itself which would make any fire or life insurance schemes a success. Those who advocate them do not do so wisely, and we believe it to be our duty to say so. Let us do one thing *well* first. Let us develop *Photography* "for all it is worth" first. It is wonderfully promising. Rather let us devote time and energy and thought to the subject of making our art remunerate us better and not be diverted by schemes of doubtful wisdom and certain failure. We do not think photographers, as a class, are any less smart than many another class. Yet we have seen bodies just as smart as they are, fail in projects which seemed remarkably simple and easy, but which, when brought to a practical test, flashed out, and left but a black residue of sorrow after them.

When our fraternity assembles at Minneapolis it will be reminded that in that city, about three years ago, *The Secret Order of Scientific Photographers* was organized. From one high in authority, with whom we personally consulted recently, we learn that locally, this organization has had a benign effect. It may be worth while to consider its growth over the country.

At all events, let it be said, after the Minneapolis Convention, that its officers provided an artistic educational feast, that not only benefited the attendants, but sent out to those who are equally interested, and who could not come, a vast amount of instruction and help. Then the question will no longer be asked, "What good does the P. A. of A. do toward the advance of our art in the widest sense?"

Mr. W. H. Potter, Secretary of the P. A. of A., Indianapolis, Ind., has issued a circular of "Railroad Information." It can be had free on application. Our experience with railroads is, that they do not provide their agents with blank "certificates," as promised by their passenger agents, and, therefore, it is hardly worth while to use our space for their "terms." Make the best terms you can with your local agents, soon, for there will be delays.

An Eastern Organization.—"It seems as if one had to go away from home in order to learn the news at that familiar place. It was, therefore, with considerable surprise that our representative learned in Chicago of a movement among the eastern members of the P. A. of A., together with many others, to organize an eastern branch of the National Association, or what would more probably be an independent organization. The exact steps to be taken will, very probably, be decided by the action of the Convention this year at Minneapolis. Having been located in a western city for the past four years the eastern members are very naturally growing restless, and a convention in another western city would probably result in their seceding from the National Association, or in forming an eastern branch of that organization. We know too little of this movement at the present writing to say much about it in the way of advice or suggestion, but we feel assured that if such a movement should be consummated under the leadership of the man who is proposed as the first president, there can be no doubt of an immediate and pronounced success. Boston seems to be the place desired by most for holding the first convention, and we are quite sure that with the interest shown by the leading photographers of that city and New England, together with the influential dealers throughout the east, a large convention could be held, and one which would result in benefit to all concerned. All those who took part in the Convention of the N. P. A., which was held in Boston many years ago, look back to it as one of the pleasantest Conventions that has ever been held; and undoubtedly a convention of the new organization, which is proposed to combine the good features of the old N. P. A. with those of the present organization, leaving out many which are objectionable in the present National Association, would result pleasantly and beneficially to all who attended.

As the movement crystallizes we shall have more to say concerning it. In the meantime, the action of the Convention to be held next month at Minneapolis will very likely largely determine the immediate proceedings of those who are active in this new movement."—*Photographic Times.*

We make the above extract from our esteemed contemporary as a piece of news, though not surprising news. There is a decided want in the P. A. of A. of the "no north, no south, no east, no west," spirit. The "our whole country" feeling needs cultivation. If it is neglected, there will surely be a second organization.

ON ORTHOCHROMATIC COLLODION EMULSION.*

BY PROF. J. M. EDER.

THE photographic collodion negatives undoubtedly possess in certain respects an advantage over the gelatine plates; the former are especially superior to the latter in transparency of the film, and delicate modulation of the pictures. Since these matters are particularly important in photomechanical printing, I concluded to bring the orthochromatic collodion process (in the form of a bromide emulsion) before the Imperial Institute for Photography and Reproduction. The method of the orthochromatic photography with bromide collodion has for some time been used in a few studios; however, no information regarding the methods of procedure in these studios has been made public, which would have made possible safe and easy accomplishment. I, therefore, undertook my old experiments again and succeeded in perfecting the following very simple method, which, in spite of its exceeding simplicity, is very sure.

This method has been in practice with the scholars of the Vienna Institute for some months, and a detailed statement of the same appeared in the report of this public institution May 14th.

The emulsion is as follows:

(A.) 15 grammes crystalline silver nitrate are dissolved in a bottle with 12 c.cm. water, and then 90 c.cm. alcohol (95 per cent.) are added and then mixed with 150 c.cm. 4 per cent. raw collodion.

(B.) 15 grammes pure crystalline cadmium bromide are, in mild heat, dissolved in 75 c.cm. alcoholic eosin solution (1 : 800) and then 150 c.cm. of 4 per cent. raw collodion are added.

Now the bromide collodion is gradually added to the silver collodion, shaking all the time (and in the dark-room) until from 5 to 10 c.cm. only of the bromide collodion remains; then begin the test, whether there is still present in the emulsion surplus silver nitrate. This collodion emulsion only works favorably when it contains a small surplus of silver nitrate, which causes the formation of eosin silver; if the bromide is in excess, then only the far weaker sensitizing effect of the eosin is effective and the emulsion is much less sensitive. To ascertain whether there is a surplus of silver nitrate, a few drops of the emulsion can be put on a glass plate; let it stiffen and then add a drop of a solution of yellow chromate of potash. If there is a great surplus of nitrate present, then an intense cherry-red spot (chromate of silver) appears. Now some bromide collodion can be added and the test repeated. As soon as a weak orange-red spot is formed, the emulsion is ready for use. An emulsion with a large surplus of silver nitrate gives more sensitive and stronger, but impure and frequently veiled plates; with too small a surplus of nitrate the emulsion becomes insensitive and the orthochromatic effect is diminished. In this case 1 grm. of silver nitrate is dissolved in a few drops of water, 10 c.cm. alcohol are added, and this solution gradually mixed with the emulsion until a good proof is obtained. Emulsions with much coloring matter bear more silver nitrate. The emulsion can be used at once. It is better, however, to let it stand from twelve to twenty-four hours.

The glass plate to be covered is to be streaked with a caoutchouc solution on the edges, then collodionized as usual, and after it stiffens dipped into a cup of well water and left there until the water is taken up uniformly by the layer. Thereby are the

* Notes from the Vienna Imperial Institute of Photography and Reproduction.

nitrates contained in the unwashed original emulsion removed. It is best to expose the plates while still wet; after the drying they are unsensitive, etc. The time of exposure is about half of that of wet collodion with iron developer. Most pictures are to be photographed orthochromatically with such emulsion without the yellow disk; glaring blue can eventually be suppressed with an aurantia-collodion yellow disk.

As developer, the iron oxalate, pyro soda, or ammonia can serve.

The following is a good receipt of a developer in use on the other side:

(A.) 100 parts water, 10 parts sulphite of soda, 3 parts bromide of potassium, 1 part citric acid, 2½ parts pyrogallol.

(B.) 1 part ammonia and 6 parts water.

Before use 100 c.cm. water, 10 c.cm. pyro (A), and 10 c.cm. ammonia (B) are mixed together.

The picture appears quickly and is completely developed in from thirty to fifty seconds. Hyposulphite of soda serves for fixing. Should the plates veil with this developer, then a mixture of 6 parts B, 12 parts A, and 100 parts water can be used.

It is worthy of remark that the silver precipitate of the collodion emulsion plates by too long an exposure is colored reddish.

After the fixing the plate is washed, covered with weak alcohol (50 per cent.) so as to remove the last vestiges of eosin, and then again washed with water.

Strengthening is hardly ever necessary; it can be done, though, with silver, pyro, and citric acid; reducing is frequently necessary, and for this purpose the well-known mixture of fixing-soda solution with red prussiate of potash can be used.

The emulsion will keep from eight to fourteen days, then there frequently occurs veiling. If one wishes an emulsion that will keep, he should produce it with less surplus of bromide, and add first before using the surplus silver nitrate.

Good results can be obtained, also, if one weakens the emulsion with water, washes, dries, and dissolves in ether-alcohol, mixed with the dye and silver nitrate, then use. The first-named method, however, is simpler, quicker, and less costly.

In the use of the collodion emulsion plates, a preservative of albumen or gelatine was also tried with not unfavorable results.

THE SILHOUETTE.

BY R. BENECKE.

In the June number of your valuable journal I noticed a request to describe the best method for making photographic silhouettes (don't spell it silhoutte). Having had some experience in that line, I will try to describe my *modus operandi*, which is very convenient and inexpensive. Things required are: Two backgrounds, standing on casters (if possible of a dark color, if not pieces of black calico can be hung over them); a third ground of white muslin, and several yards of black calico. Now put the two dark backgrounds nearly parallel to each other, and far enough apart to place the sitter between them. Throw the pieces of black calico over the backgrounds, thus forming a tunnel, at the end of which place the white screen, tipped back slightly to reflect the greatest possible amount of light into the camera. At the other end put the camera, and focus on the sitter's profile. Insert a small stop, so as to get the outlines well defined. Should too much light enter this *camera obscura* from the side where the camera stands, shut it out by means of strips of black calico. A little light gives faint detail, and is not at all hurtful.

OUR PICTURE.

We are quite sure that a landscape study will be welcome to "our picture" lovers at this time of landscape catching—this season of "breath" taking and "breadth" attaining.

We are indebted for the negatives used to Mr. Will H. Mowrey, of the Beatty Studio, Milford, Mass. Ten superb negatives were the reward of one of Mr. Mowrey's private rambles around and about Skaneateles Lake, New York. A few prints from them sent us by him aroused our covetousness, and as a result the negatives were promptly loaned to us that we might share the pleasure and instruction derivable from them with our readers. We rarely see so many negatives running so uniformly

good. How they were obtained is modestly and clearly told by Mr. Mowrey on another page. He used the Seed Dry Plate Co.'s plates. Nothing could be more excellent. Mr. Mowrey says he has used them exclusively for four years. He is a photographer of the second generation. His father, now seventy years old, has practised our art for thirty-three years, and is still "on deck" we are informed.

We cannot say too much in praise of such careful work—of the artistically chosen subjects—of the exact exposures and skilful technique. With such practical examples, and helped by the instruction in the books, we are sure much good landscape work will follow the efforts of our readers who are so fortunate as to have time to go out of doors with their cameras.

The prints were made on the celebrated N. P. A. paper, imported by Messrs. E. & H. T. Anthony & Co., at the printing rooms of Messrs. Roberts & Fellows, 1125 Chestnut Street, Philadelphia.

LANDSCAPE PHOTOGRAPHY.

BY WILL H. MOWREY.

In landscape photography I think a great many times the mistake is made in trying to embrace too much of the surrounding country. In looking over a collection of views there will be some that you don't get tired of, and nine times out of ten you will find those which please the eye best, and are the most artistic, are those that have the least of the country in them, or, in other words, a local view of any given point. In studying the different art works and the illustrations, we learn that a wrangle of trees, stumps, rocks, etc., does not make pictures with any degree of art in them. There are many views spoiled by crowding the plate full, in an aimless manner, with a little of everything, having one side balance the other almost the same, when they would have been gems by moving the camera a little or choosing other standpoints, following a few principles of art composition. Our art, when practised out doors, needs as much thought and study as the model under the skylight.

When you come across a view you would like to transfer to the plate, study it well, and get the best standpoint. To make an artistic picture this cannot be done without study and education of the eye in art principles. Bring out the important parts of your subject, and bar out everything that will confuse the eye. Let the subject tell its story, and let the rest harmonize. If you want balance, let it be some object that will not attract the eye first. I find that in most cases the middle distance is the proper place, especially in waterscapes. When the standpoint has been secured, the next important step is the light, for on this depends the life and brilliancy of the effect. If the light is not right, wait until it is. We have no curtain to regulate it as we do in a skylight-room; don't be in a hurry, for one well-lighted landscape is worth a dozen poorly-lighted ones, and it will repay you for waiting. When it is right, make a careful exposure.

Then we come to the most interesting part, and the one filled with the most difficulties. At this part of the operation great care must be taken. Take your time, watch closely the effect the developer has on the plate, develop for detail in the shadows; then, if the plate is properly handled, the high lights will take care of themselves. We all have different ways to accomplish the same object, we want to get the best results. And I might say there would be less trials and failures, if operators would use a plate from one of the standard manufacturers, and stick to it. Do not hop from one plate and developer to another, without first finding out what is the matter with the one you are using; the same difficulties may arise when you use others. Find out whether the fault is in the plate or the way you handle it. Dry-plate photography has many difficulties, and the only way to overcome them is to go at it with hammer and tongs. A photograph is made up of important parts, and, in order to make it a success, we must study each part thoroughly. It pays to spend each day a little time in the study of art books; I have found a great deal of encouragement in studying them. It is not very often I can get away to take an outing with my camera, but when I do

I choose a day with good cloud effects. A northwest wind after a storm generally brings them. I like a very blue sky with white clouds. There is more satisfaction to have the clouds on the same plate with the view than to print them in afterwards. It is a great pleasure to me to look over views, and study them, and I hope it is to you.

ART EDUCATION.

BY ANDREW PRINGLE.

THERE are very few persons in this world who are entirely incapable of being reached by the sensation of beauty. It is not necessary for my present purpose to define beauty even were the term amenable to definition, for happily every man has his own idea of beauty and his own ideal of the beautiful. Moreover, one man may be dead to one kind of beauty, and keenly alive to another kind; or more accurately—for it is a question whether beauty itself in the abstract can be divided into kinds—one man may be constructed with a keen sense of beauty in one class of objects but incapable of discerning beauty, or the reverse, in another class of objects. Thus there are many persons incapable of discerning between good and bad in music, while the same persons are lively affected by what they consider good or bad in the graphic arts. I write "what they consider good or bad" of set purpose, for it is a merciful dispensation of Providence that there is no hard rule for beauty, and every man, however educated or however uneducated his taste, has his own *beau ideal* and his own "pet version."

We photographers have to deal with graphic art; and probably there is no line of art where beauty is more earnestly aimed at, where there are more varieties of beauty, or where the rules for beauty are more clearly laid down than in our art—the graphic art. In music, for instance, beauty is undoubtedly aimed at by composers, the ideas of beauty displayed in the compositions are, so far as possible, translated by the performers; but the performer is very seldom the composer, and most certainly the performance owes its merits or demerits in a very great measure to the performer, so that there is not in music the same soul to soul communion between producer and consumer, to use a villainous metaphor, as there is in graphic art. As a result of this it happens that the observer of a picture gains a far better insight into the mind and method of the painter than the hearer of a musical composition gains into the purpose and genius of the composer. Finally, it results that the picture lover is far more nearly a picture-maker than the music lover is near to being a composer; in other words, the rules that govern graphic beauty, so far as rules do govern it, are far better understood by the general public than the rules that govern the beauty of music.

Every writer on art takes care to start off by saying that art has no rules, and then straightway proceeds to gives rules for art. Now I perfectly understand this paradox, and venture to explain it thus: The commonplace is little likely to be thought really beautiful, and an exaggerated departure from commonplace is very likely to be offensive. The few rules that can be given, that ought to be given, that usually are given, are negative rules. They forbid; they do not suggest, much less dictate. We are not told that we must balance this by that, that we must have this or that; we are told what we must avoid if we would avoid ugliness, what errors we shall commit if we do this or that. It would be an impertinence for any one, however great a master, to say to a student: thou shalt balance that line by that other, or that light by that shadow; all that the teacher has right to do, all that the good teacher does, is to point out to the student what will be the result if such a point is not attended to, and the student must judge for himself whether that result be suitable to his purpose or not.

But the best of all art teaching is that of example; all the best teachers have taught chiefly by example. The virtues of example-teaching are, that it is not dogmatic; that it fully allows for the infinite variety of tastes and of intelligences; that the student may profit by the example without being enslaved by it.

These remarks of mine, given with complete diffidence, are suggested by an instance, perhaps the most pointed to me, of the ex-

cellence of example-teaching. I have before me a copy of a book entitled John Burnet's *Art Essays*. The book was not written for photographers; yet, leaving out the question of coloring, there is not a word in it which might not serve as meat and as drink to any one of the meritorious band of photographers who are now aiming at raising photography as high as it can be raised in the realms of art. I am not one of those who believe that photography can ever reach the very summit of the artistic Parnassus, because I am old fashioned enough to look upon the ideal or imaginative as the highest art; but I do assert, and always have asserted, that photography may climb very far up the hill, and reach a position very honorable, and quite abreast of nine-tenths of the painting art we see today.

It is undoubtedly true that all men are not born with equal capacity for understanding or interpreting the highest styles of beauty in any art; one man is naturally more sensitive to and affected by the best kinds of beauty than another man; but no man was ever born capable of interpreting or reproducing for other men's benefit any really good kind of beauty, and such ability only comes by study and practice. An untrained mind let loose in the garden of art may admire some of the flowers, but he will certainly trample on some of the gems. It is necessary not only to sympathsize with the motive of a picture but also to comprehend, to some extent, how the conception has been worked out, and *why* the picture pleases us or offends us as it does. This capability comes only by study; though if artistic feeling be innate the study may come easier, the conception certainly will be more rapidly and more completely comprehended.

A certain amount, then, of study is necessary in order to make the most artistically born man an artist in performance,—in order to make innate art blossom into visible art; and great is the debt we owe to those who have given us the results of their study, as Burnet has in the book to which I am alluding. He has chosen the best of all methods of teaching art; he lays not down rules to trammel us, but he gives illustrious examples of admittedly artistic productions, he tells us why they please us, and he does all this not mysteriously nor confusedly but bit by bit, decently and in order, "line upon line, precept upon precept, here a little and there a little." The result is an education lucid, simple, progressive, and eminently suited to the somewhat delicate requirements of an art student who wishes guidance but spurns compulsion.

It is all very fine to sound the cracked trumpet, "Art has no rules." It has rules, and before we can with impunity break them we must learn to keep them. Independence is commendable, ignorance inexcusable; self reliance is manly, mannerism abominable.

Bexley Heath, Eng.

EXPLICIT FORMULÆ FOR DEVELOPMENT.

BY THOMAS PRAY, JR.

"If there is such a thing as explicit instructions as to exposure and development for any well-known plate, please give us an article upon it, and so confer much comfort upon amateur subscribers and friends of the Philadelphia Photographer."

This is only one of several inquiries, in almost the same words, and it may be that many are beginning to work for results, not for the number of exposures, or the variety of subjects.

It is first necessary to have pure chemicals, good soft water, free from lime, acid, or alkalies to any appreciable extent—a great deal of stress is put on *ice water;* it is frequently the most impure element in a developer. Distilled water is about as bad; for what is sold as "distilled" is simply *condensed steam*, and has all sorts of foreign substances in it. Real distilled water can be had from reliable people for fifteen cents per gallon in five gallon lots, demijohns or jugs extra, and in half or whole barrel lots at ten or twelve cents per gallon, container extra, and freight is so cheap that no one need to go without pure water.

In small quantities it can be distilled at home (see *Quarter Century*), but in case of need in a hurry, boil water for ten minutes in a clean porcelain kettle, let it get cool, filter

through a plug of cotton, keep in a jug or *clean* bottle.

Boiling and filtering gets rid of many of the vegetable and other impurities of city water from old *bog holes*, *peat bottoms*, and various other material taken into water supplies by the usual hocus-pocus methods of the powers that designate, lay out, buy land, and *combine* to supply us with water from the sources from which somebody can make much profit.

For chemicals, with the editor's approval, I wish to say, that for five or six years my own have been purchased almost entirely from Messrs. Charles Cooper & Co., 194 Worth St., New York, who are large makers of, as well as refiners of chemical products, and who make a large line of articles expressly for photographers, and who have been with my orders very careful, and entirely honest as to quality, quantity, etc. Their circular will be sent on inquiry, and small orders filled reasonably and with certainty.

In soda and potassium we hear so much of "granulated" that I wish to say, my own experience proves the soundness of chemical reasoning. Use the purest you can obtain, *in crystal form*, of these two substances, and leave the painful precision, for those who do not know fully the reason, why I use "Cooper's Pure Carbonate of Soda" and "Pure Carbonate of Potash," and have never found them to test out any perceptible departure from their label "Pure." In pyrogallic acid there are many substitutes for a good acid, but none better, nor more uniform, in my own experience, than "Schering's," which can be had in one, two, four, and eight ounce bottles or cans, and in pounds, etc. The bromides of sodium, ammonium, or potassium, can be had of any good druggist. I use only soda in my developer, with potash. Hypo ought to be used in solution; twelve or thirteen ounces put into a two-quart bottle and filled up with warm water; let it stand a day; it should be kept in crystals or solution in a bottle, *corked*.

Alum, ground, costs three to ten cents per pound, in ten-pound lots, and makes the cleanest clearing bath of anything I have ever used; put two and a half ounces into two quarts of *warm*, not hot water, leave it over night. Chrome alum costs forty to fifty cents per pound, requires nearly half as much in weight, and wont do one bit better work or any more of it. Neither one nor the other alum should ever, on any account, be put into the hypo bath; if you understand chemistry you would ask no questions; they are in every respect like a cat and dog tied together, in another like a careless photographer, or one who is not cleanly about his or her work; when they are separate the alum acts as scavenger, as you will soon be convinced, in the watching of the process. The alum solution catches the pyro and soda, cleans it out of the film, and soon turns *reddish yellow*, but before it becomes *real* dirty and blackish-red it should be thrown down the sink. Now if the solution of hypo and alum, or chrome alum, are put into one mess, it soon becomes filthy, and in one case a yellowish dirty color, and is really a compound sulphur bath and will give the film a yellowish tint, not very clear at first, but painfully apparent in a few months. Far better that you *dont* put the hypo and alum baths into one.

So far, at the risk of repetition, I have gone over the same ground many times for the PHILADELPHIA PHOTOGRAPHER and *Mosaics*, for the last three years, to which new subscribers, or borrowers, must refer for detailed directions.

Now for "Explicit Instructions" for some "well-known plate."

Happening to have some "Carbutt's B" sent me, and a lens, one of "Gray's Periscopes" about which (the lens) I knew nothing, for trial, I will refer to them. I have used Gray's "Periscope" No. 2, 2d stop, or next to smallest; have not measured it as to *f;* bright clear day, blue sky. White clouds and sun playing hide and go seek, light strong, some wind, date June 2d; plates marked 16, of sensitometer. The subjects were highest light and deepest shadows in a cemetery; in three exposures; white and deep shade, an apple tree in complete perfection of flower, and a lane, or street, with elms on either side with boughs interwoven over street, with deep shade where evergreens are on sides of street, and sun lying bright in the street on some of the places;

and a house on shady side, where peaks, corners, fancy gables, odd colors, and deep shadows were all to be seen, no sun on any portion, and in a cloud at the actual time of exposure. The longest time was five and the shortest two seconds, observed from an independent second timer.

The developer used was:

Cooper's pure carbonate potash, 4 ounces or 1920 grains; distilled water, 8 ounces, making 240 grains per ounce, or about that amount. Take distilled water 4 ounces, potash solution ½ ounce.

When poured together in graduate take another graduate into which put 18 grains of Schering's dry pyrogallic acid, and on this pour the mixture of potash and water solution, and you have a developer which will bring out an instantaneous exposure or any other where light has ever struck the plate. We have now a developer *entirely too strong for ordinary use* (note this point), and to make sure, we take two and a half ounces of this four and a half and put it into another graduate and then add one and a half ounces of water. We now have four ounces in one graduate which has been weakened; now to make very sure we set the strong two ounces on one side, but near enough for reach, and to the diluted we add *fifteen* drops of a solution of bromide of sodium fifteen grains to the ounce of water—we are using 4¼ x 5½ plate—now put hypo in a pan, deep enough to cover the plate, and into another pan the alum solution, deeper than needed. Darken the place and go ahead. I take a plate of longest exposure from the *six*—my holders are all numbered with black figures an inch long—I also have a wide-mouthed bottle, holding water, near the tray. A plate goes into the tray, it is covered with the weaker developer all over, using about two ounces in five seconds; back goes developer into graduate and back on plate; in three seconds more the "trouble" commences, and the plate comes up to a *real picture*. Off goes developer again—for exposure to air is exactly what makes pyro do its work—and in two or three seconds back again so as to carry the whole a little beyond the pretty picture phase of development; carry it along until the sky and high lights are dense, and the shadows lose the yellow and grow a little indistinct, not real dark; then we call it finished as far as development goes, and put it to wash under running water for three to five minutes. This clears the film of pyro and soda or potash, and we then put the plate in the alum bath for twenty to thirty seconds only; this prevents frilling if the plate is of any value, and also clears out the pyro, soda, or potash that the *water does not* out in so short a time; then into the water again for one minute and then into the hypo, which has been made alkaline by a few drops of ammonia, or carbonate of soda solution, and leave it there until all the white bromide has disappeared, and for three minutes longer, to ensure that not a particle of partly dissolved white bromide shall be left on the plate, to make you trouble in the time to come by its changing on exposure to the light in printing, and so spotting both negative and print. When the negative has been cleared by the hypo, wash for another minute or two under running water, or souse it in a body of water up and down, then replace it in the alum bath for twenty to thirty minutes, and wash for three-quarters of an hour or for three hours. When done let the water run across in any one direction from one corner, and do not alter that position when you put it on the rack. Let it dry over night, then warm it gently all over and use some good varnish. I use Cooper's Brilliant Negative Varnish; buying a pint at a time and reducing it one-third with refined raw alcohol. This dries hard in half an hour, so as to be put in a printing frame, and if the silver paper is damp it will not *stick*.

There are many little kinks, tricks, or niceties in this that might be added but for the room required. The negative when finished and looked down upon, from the glass side, *ought* to look a slaty yellow or yellowish gray in the sky and pretty near bare glass in the deep shadows, with all the intervening shades between these two extremes, making what is spoken of as the modulations.

Now as to the uses of the two strengths of developer: if, on the known longest exposure we find an inclination to develop too fast, a very few drops of bromide of soda

solution will "hold it" or make development slow enough to ensure proper density in the high lights; and if a plate follows that does not come up as speedily as it should with the weaker developer, we return it to its proper graduate, and pour on from the other graduate for a moment the very strong developer. Then as soon as any change takes place return the strong to its glass and put on the weak to finish, saving by this simple process hardness and uncertainty, as the weaker is used over and over by succeeding plates; two or three drachms can be thrown away and one or one and a half drachms of the stronger added, keeping it active and useful. This is simpler than adding a half drachm of alkali, fourteen drops of pyro, and two drops of bromide, and does not take another drop of developer, and costs, as near as can be computed, about three-fifths of one cent to develop such plates as have been used for the basis of reply to my inquiring friend.

The bottle of water has almost been forgotten. If a plate is badly over-exposed pour in water, make the developer *real strong* in water and you will save the plate; and if the plate proves to have been much under-exposed, put in two or three times as much water as you have developer, cover the tray up, go about other work or go and read some good book, and at the end of half an hour go and take a peep at the plate; you will find something on it, if there is ever to be anything visible. DONT put a strong developer on a plate at all unless you are making snap exposures, and then it pays to "dont." Rushing development is like rushing some other matters, it *dont* pay.

By this means almost any exposure can be, by a little care, made into a fair negative, and any other good developer can be used with proper modulation. Some plates will not stand the amount of alkali that Carbutt's do; others require more, and some less pyro, and other plates *will not* stand this treatment as to strength of solution. This answers explicitly the questions, perhaps at too much length, but if any amateur will take any of the good plates, Carbutt, Cramer, Seed, Stanley, or some others, and work them carefully, he can master any of them by perseverence and attention; but any amateur will make the most progress in a given time by taking one plate (and Carbutt's B is an excellent plate for all sorts of out-doork work) and thoroughly master that, then he or she can tell over- or under-exposure, right density, etc., and be happy.

A print from each of the six plates exposed goes with this to our good friend the editor of the PHILADELPHIA PHOTOGRAPHER, upon which, if he sees fit, he can pass his judgment. The lens work is surprisingly sharp for any lens, and Mr. Gray will find orders from pleased customers as his Periscope becomes more known.

[We can endorse Mr. Pray's praise of the "Periscope."—Ed. P. P.]

NOTES FROM LONDON.

BY T. C. HEPWORTH, F.C.S.

ARE you troubled with the automatic distributing madness in your country? Here, the system is becoming quite a nuisance, not only at the shop doors, but in all our railway stations. Go into any one of these latter and you will find: 1. A machine which will weigh you if you stand upon its foot-plate and drop a penny into a certain slit. 2. A machine which on like payment will furnish you with a sheet of paper and an envelope. 3. A machine which on like conditions will give you a cake of chocolate or taffy. 4. A penny cigar (warranted all pure Havanna tobacco —operas) likewise obtainable by the slit operation. 5. A scent-bottle for a penny. But I need not complete the list. We are now threatened with a machine for distributing in this manner photographs of popular characters. I cannot think that this will prove a success, for in the first place, if people want such things they will buy them in the ordinary way; and, secondly, a good photograph, such as people would care to have, cannot be produced at such a low price. But these efforts at automatic distribution must entirely sink into the shade when compared with a grand scheme which was patented lately. The specification has been published, and reads like a ponderous joke; but it is no make-

believe, and is brought forward in all sincerity of purpose. The subject of this patent is a machine which, on dropping a coin into a slit, will take your photograph, develop, and fix it, and deliver it to you in a finished condition. This cycle of operations will all take place while you are waiting for your train. We shall next hear of a machine which will compose and print THE PHILADELPHIA PHOTOGRAPHER, if only the right coin be dropped into a slit. You will soon see why I stigmatize this automatic craze as a nuisance. The machines are beginning to do work in which brains were formerly required, and I begin to feel that my occupation is in jeopardy.

Although we are now well on toward the middle of the year, everything in the way of vegetation is most backward. It is now apparently the beginning of spring instead of summer, and we are not yet rid of those occasional frosty nights, which nip the fruit trees and which remind us that winter has not quite left us. But the light is splendid for photography, and the trees are in that half-fledged condition when they make such lovely tracery against the sky. Amateur camera-bearers are to be met with everywhere. Indeed, the photographic mania is becoming so general that presently the man who has never developed a plate will be considered a fit subject for receiving a medal. Detective cameras are very much to the fore. I have been experimenting in that direction lately, and have come to the conclusion that, except for certain occasional use, the secret camera is unsatisfactory. With an ordinary camera you know what you are about, and if you take out with you twelve plates you have a reasonable expectation of bringing back with you twelve negatives. But it is not so with the detective camera; one plate gets too much sky, another too much foreground, others suffer terribly from under-exposure, and altogether you obtain from your negatives only a small percentage which are worth printing from.

But occasionally, as I just said, the detective method is useful. I certainly found out its value the other day, when I wanted to photograph a spot in the Temple Gardens. I chose Whit Monday for my visit, knowing that most Londoners on that day flee from the city, and leave its streets and squares in peace and quiet. I set up my camera, but before I could take a view a vigorous beadle—in purple and fine linen — by which I mean in the pride of gold lace and brass buttons, strode up to me and asked whether I had permission to take pictures on that private ground. I faltered out a negative (the only one I achieved alas !), and the gorgeous one glared upon me with disdain. In a word, I had to beat an ignominious retreat. But the next day I arrived on the spot with my detective camera, I took my picture while the Jack-in-office himself stood by. I smiled with sweet complacency upon leaving the gardens.

It is really ridiculous to observe the manner in which people are forbidden to take photographs without going through the formality of asking permission first, which permission is often dependent upon the whim of some committee, which does not meet perhaps for a month after application is made. I recently passed through a piece of vacant ground which has been reclaimed, planted with a few shrubs, and passed into the hands of the Metropolitan Board of Works, for use as a public playground. This, of course, is all very well, and the utilization of such waste ground cannot be too highly commended. But the said Board of Works immediately drew up a code of laws and regulations, many of which are simply idiotic. One is that no one may take photographs without its permission. If you could only see the place how you would laugh. The ground is about five acres in extent, is surrounded by small villa residences, is perfectly flat, and has about ten pounds worth of straggling shrubs planted upon it at regular intervals. Fancy photographing such a place !

There has, for some time, been a great outcry in this country concerning the employment of foreigners, principally Germans, in various occupations to the prejudice of native-born Britons. At first sight, one's patriotism (of which I suppose the meanest among us to have some modicum) is aroused, and we cry shame on the thing, and wish that there were some law by which the intruders could be kept away. Such I confess was my own feeling. But my love

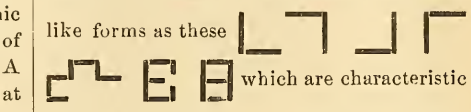
of country has been somewhat qualified by an experience which I have recently gone through. I will suppress names and details. Suffice it to say, that I have for some time required certain photographic work to be done, amounting in the course of the year to the value of about $1500. A London firm undertook the work at what they called their most favorable terms. It presently became known that this firm was doing the same kind of work for others at a considerably reduced price. They were expostulated with, but still refused to make any reduction, except upon terms which cannot be complied with. I now, very much against my will, and after trying my hardest to work with the Londoners, asked for tenders from a foreign house. The result is that the work is now being done abroad for about one-fifth of the prices formerly paid.

PHOTO-ENGRAVING.

BY D. WINSTANLEY, F.R.A.S.

SINCE writing my last artice on this subject I have received numerous examples of photo-mechanical printing from various sources, amongst them some by the Moss Engraving Co., of New York, some by Messrs. Bemrose & Sons, of Derby, other examples of the "Meisenbach" process, and an admirable collection by Angerer & Goeschl, of Vienna, for which latter I am indebted to the courtesy of Mr. W. E. Woodbury, their English representative.

I have already dwelt at length on the results obtained by the process "Meisenbach," and it now only remains for me to make some observations on the other processes, and on photo-mechanical printing generally, to bring to a close my present series of articles on this subject.

The pictures by the "Mosstype," of which three specimens occur in *Photographic Mosaics*, for 1888, are evidently produced by means of lined reticulators, and are essentially similar to prints produced by the process "Meisenbach." They are characterized, however, by the prevalence of horizontal lines in the shadows, and the fact that the dots are practically confined to lighter portions of the picture. The results are certainly very fair, superior unquestionably to those of "Meisenbach." When examining them with a glass I fail to detect other than mere traces of the key pattern, and such like forms as these  which are characteristic of the latter process. In the instance of the "Mosstype" the tendency of the shading to run in lines is exhibited much more in one direction than in the other, in the horizontal than the vertical, and this result is certainly an advantage. The question is, "How is it obtained?"

If we take a negative of a large number of parallel lines ruled in black ink on paper, we have at once what is virtually a positive copy of the original as seen by transmitted light, *i. e.*, we have lines which are clear and lines which are black. If now we superimpose such a semi-reticulator upon the subject negative from which a photo-engraving block is to be prepared, and make a transparent positive from the combination, that positive will be lighter than a normal print from the negative alone, just as much as the negative is darkened by the black lines we have superimposed upon it. Let us suppose that we have made the lines to cross the negative in a direction horizontal to that of the proper position of the picture. The result will be that the transparency will be crossed by clear horizontal lines in the deepest shadows, in the half-tones in any portion where there is shading, but not in those lights which are absolutely clear because there they would be invisible.

If from this transparency we make a second negative, interposing the ruled surface with its lines in the vertical direction of the picture, we shall add to the clearness of the negative just as much as we added to the clearness of the transparency, and, in fact, leave the *tout ensemble* of light and shade the same as in the original negative. The second negative will be crossed by clear lines in the vertical direction in those parts where the transparency was quite clear, and in those parts where there was any phase of half-tone, but not in the parts which were impenetrable by light, *i. e.*, not in the blacks or deepest shadows.

If, however, we use semi-reticulators, the lines of which are not black and impenetrable, but only half black, our transparency will have white horizontal lines across it in the genuine half or midway tones; it will have semi-transparent lines in the deep shadows and no lines at all in the absolute whites, and our second negative will have a chess-board effect in the half-tones and vertical white (clear) lines in any absolute whites, and clear horizontal lines separated by vertical lines of half-tone in the shadows; and it is from such negatives and so prepared that I apprehend the "Mosstypes" have been obtained, for such negatives so prepared would give such results as the "Mosstypes" are.

A great deal of mystery is made, or intended to be made, by successful photo-mechanical printers as to the details of the processes they use, and we are intended to to believe that the great secret of their success lies in the admixture of their chemicals and in the "entirely new formulæ," which, "after years of study and enormous cost," they have been enabled to evolve.

We are told, for instance, in connection with one process to use a certain person's "gold label gelatine," as though that had anything to do with the results obtained. Of course, anybody's gelatine will do if it is good, even though the label be of copper. We are told in one formula I have before me to add nitrate of silver to the gelatine, then bichromate of potash, then chloride of calcium, and then glycerine. The ingredients of this pleasing prescription are to be well mixed in definite quantities. This kind of thing I regard myself with very scant respect. Gelatine is soluble in hot water. Bichromate of potash or ammonia added to its solution become reduced on exposure to light. The gelatine appropriates the nascent oxygen and becomes insoluble, thus enabling us to get a picture in substance from one shadow. The gelatine is apt to split to pieces in the act of drying, and glycerine (or sugar) will prevent this. The nitrate of silver, though of use enough in the ordinary processes of photography, is, to my thinking, not only useless but pernicious here.

This kind of mystery will not do. The problem of photo-mechanical printing is a physical one. The chemistry of the subject dates from the time of Mungo Ponton, and what is now required is the provision of more clearly intelligible physical means of producing a "discriminating" grain than the means which now exist, particularly for typographic printing.

I pass on now to speak of the pictures of Messrs. Angerer & Gooschl, of Vienna. The specimens with which Mr. Woodbury has favored me are thirty-six in number, and are bound together in a very handsome book measuring 11¼ by 7½ inches. The specimens are illustrative of the processes of "chemigraphie," "phototypie," and "chromotypie," *i. e.*, of etching, photo-block, and chromo-litho, and the subjects embrace designs, copies of engravings, of pen and ink sketches, of pencil sketches, drawings on toned paper, and original photographs. Some are of the same size as the originals, some are reduced, some are vignetted, some are produced from more than one negative, several from more than one stone, many on toned paper, and one is a most admirable imitation of a water-color drawing in seven colors. The whole forms the most admirable, portable collection of photo-mechanical results which I have ever seen, and is another evidence that in England we are behind the Continental nations. Those of the pictures which are reproduced from line subjects do not call for special comment, as the known methods of doing this kind of work leave little or nothing to be yet desired. I will, therefore, confine my observations to the pictures in which half-tone has been more or less successfully obtained where it did not originally exist in lines or dots. An examination of these show that a great variety of reticulators have been used, producing waved lines, waved lines of dots, "honeycomb" pattern, a peculiar system of interlaced curves, and a mixture of these curves with the waved lines of dots. In every case the grain is admirably adapted to the subject of the picture. Messrs. Angerer & Gooschl have evidently made reticulators in every way which they could think of, and tried them on every kind of subject they could get hold of; they have found out the kind of grain which serves each purpose best and use it in their practice. They

have printed on paper specially suited to their processes, in colors specially suited to the subjects, and with an amount of care and skill very seldom to be met with here in England.

On the table before me, as I write, are several books, papers, periodicals, and pamphlets, treating on the subject of photo-mechanical printing, but none which give "the why and wherefore" of such results as those I have here described. I will, therefore, in taking leave of the subject for the present, direct attention to what appears to me to be the true theory of "reticulators" or grain-producing surfaces. If there is a weak point in the work of Messrs. Angerer & Goeschl it is in their phototypes from life. I have seen nothing to equal their productions in this way, but there is a little of something wanting in them which, in my theory of thing, is not obtainable by the kind of reticulators which it is evident have been used in the production of their work. They are, however, hovering on the borderland of that process which shall make photographic blocks all that can be desired, and I predict that by the close of the present century the death-blow will have been dealt to all the processes of reproductive printing excepting those of photo-mechanical origin. Draughtsmen will always be needed for the production of designs and for the graphical elaboration of the images of the mind, but engraving by hand in all its forms is an art which will become as extinct as the Dodo, and as much a remnant of antiquity as the Egyptian pyramids.

If we rule a fairly considerable white surface with black and parallel lines and make a negative therefrom, we obtain of course a set of black lines on a clear ground, and if we then expose a layer of bichromated gelatine thereunder we obtain, on washing this latter from the back, a set of parallel lines in relief, and the nature of these lines varies with the nature of the light to which the negative and the gelatine have been exposed. If the rays have been strictly parallel and have remained so during the exposure, the summits of the raised lines will be of the same width as their bases, and a section of the relief made crosswise will have an appearance of the kind shown here



If, however, the light has been "diffused," we shall obtain a relief having the characteristics similar to these



The shaded portions in each instance represent the gelatine, and the thick black lines beneath the magnified width of the black lines upon the negative. The angles of these gelatine ridges will, of course, increase with the apparent magnitude of the source of illumination. Whatever the angle, however, it is evident that the wide summits of the gelatine lines will approach more nearly, the deeper the action of the light upon the gelatine, and when deep enough they will coalesce. If, instead of using a sheet with lines ruled in one direction only, we use one on which they are crossed at right angles with each other, or make our negative by two exposures to one sheet, varied in the position of its lines between the first exposure and the second, we shall obtain a surface of raised dots instead of lines, and if obtained under a diffused light these dots will have the form of truncated pyramids standing on their apexes, and their vertical elevations will vary with the quantity of exposure given, so that if our reticulated surface be suitably superimposed upon a negative, or if we make a negative of both the reticulator and the subject at one time, a relief therefrom will represent the lights and shades in inverted pyramids tapering downwards with a common angle, and having vertical elevations and superficial areas proportional to the shades and shadows of

the negative, and such a gelatine surface in the ordinary or typographic press will yield pictures in genuine half tone. One of the reasons why so many failures take place is that the printing of the gelatine is done by light too much diffused, by using sources of light too large in their apparent magnitude; the result being that the pyramids are too stunted and their angles not sufficiently acute. The blocks are, in fact, too shallow. Another, and perhaps the most fruitful cause of failure is to be found in the methods of translating the picture from gelatine to metal. It is clear that the hydraulic press, as used by the late Mr. Walter Woodbury, will not answer for this purpose, as when once the soft metal has been pressed into the spaces between the inverted pyramids it will not come out again. An electrotype, however, made upon the gelatine when wet, and consequently swollen, will leave it when dry and consequently shrunk. For typographical printing the gelatine must, of course, be printed from a transparency, and for copper-plate printing from a negative, *i. e.*, printed by light which is diffused.

Notwithstanding the very excellent nature of many of the photo-mechanical prints I have alluded to, it is evident that there is still a formidable uncertainty in their production, as some of the technical journals most interested in showing what good results can be obtained have been singularly unfortunate in presenting only bad ones. The various modes of getting a "discriminating grain" which I have described as being substantially those in use, are even theoretically faulty, and depend for their success on conditions which are scarcely within control. In the present state of published knowledge, however, the best gelatine surfaces are to be obtained in a light diffused, but not too much so, as for instance on the floor of an operating room lighted by a skylight only. The thickness of the gelatine should exceed that of a simple film, and the best results will be produced by printing from the surface of the dried gelatine itself, or from an impression of it made on stone. —*Photographer's World.*

All the German princes are amateur photographers.

[*Translated for the Philadelphia Photographer.*]

THE POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 370.)

Part III. The Floating.

A good, well prepared albumen paper being given, the time of floating in a ten per cent silver bath should be only one to one and a half minutes at most; but in a five per cent. bath three minutes. For long floating (there are photographers who let this last from three to five minutes in a ten per cent. bath) does injury to the economic interests, as also to the artistic effect. In regard to the economic injury, it happens because in the further course of sensitizing the paper soaks in so much of the silver solution that nearly double the quantity is used that is required in the correct time. This silver solution dries into the paper, and goes off, then, in the washing before the toning, into the wash water. The artistic effect is injured by excessively long sensitizing, because by the entering of the silver solution into the paper, the sizing of the paper is made sensitive. Therefore, the picture appears sunken-in and without brilliance. Moreover, if the picture is old, then it appears besides to effect the dissolving of the albuminate, for the pictures lose by longer floating of the albumen paper in gloss and strength.

The drying of the sensitized sheets requires a moderately warm room-temperature, 20° Celsius, in a dry, dustless, and sufficiently dark room (yellow light).

It should result that uniformly and completely the paper ceases to be soft, and begins to get dry. In this condition it can be applied to the negative without difficulty.

Whoever dried out his paper "hard," will have to struggle not only with difficult application to the negative, but also with blistering in the washing after the fixing bath. Besides, in rolling such hard-dried paper from the inside, a number of cracks appear in the albumen.

Many photographers let the silvered albumen paper hang only so long that it is

still tender and soft, and then lay it flat and press it between clean, dry blotting paper.

Whoever lets it dry until it gets quite dry, must take care by a corresponding pressing arrangement, that the paper is not allowed to be rolled from the inside—or cracks and breaks will occur.

The attaching of a piece of blotting paper to the lower edge of the sheet hung up to be dried, in order to catch the last drops of the silver solution is much practised. The dripping silver bath is best caught in small glass vessels and poured back into the stock bottle.

He who does not bring his paper in the soft condition to the silver bath, may find that the silver bath does not flow, in uniformly draining, but remains on the albumen sheet in drops or tears. Such drops must be entirely removed by laying the silvered sheet on clean blotting paper, before the paper is completely dry.

Moreover, practical experience has shown that in many cases such albumen paper can be dried without this delay, if the albumen surface is rubbed well before the silvering with a tuft of cotton, or by breathing several times through the sheets rolled together before the silvering takes place.

The faults, which are apt to occur from uneven drying, are generally known. Finally, the negative is easily damaged by silver spots and sticking of the albumen; and the paper may print unevenly, since it is known moist chloride of silver is longer in decomposing than dry. Dried drops of silver cause bluish specks.

Even drops falling on the back of the paper cause bluish spots.

Prepared Albumen Paper.

Of late years amateurs and photographers having small studios have introduced the prepared albumen paper, because it is more convenient. But in no way can one affirm that the use of such paper furnishes advantages for the brilliancy and beauty of the prints. On the contrary, the best results can only be obtained by using entirely fresh albumen paper, whereas, all older prepared papers, in spite of all chemical additions and means of precaution, will, by keeping, always get yellow. The washed, ready-sensitized paper, on the other hand, affords this advantage, that an unvarnished negative can be printed with it without fear that the film will be touched by the nitrate of silver, because chloride only and no nitrate is contained in the paper.

Clean washed papers without chemical additions do not need to be washed before toning.

Washed sensitized paper is produced as follows:

Let it float for one minute in a silver bath (1 : 10); let it drip well, and wash it in three successive dishes under distilled water. Then hang it up to dry and finish the drying carefully between blotting paper.

For preservation, roll it with interlayers of blotting paper soaked in a solution of soda and well dried, the albumen sheet always outside, and wrap it up in soda paper. Or lay the paper with interlayers of soda paper flat in a drawer with a perforated false bottom, which covers pieces of chloride of lime for keeping it dry. The paper layers should be well weighted and the drawer or box hermetically sealed. In this way sensitized paper will keep white a long time.

This method recommends itself to all those who do not wish to silver every day. Only the paper must be well fumigated in ammonia before printing.

Different proposals have been made for the production of ready sensitized paper.

Abney recommended bathing the silvered paper in a solution of nitrate of soda.

From another source, instead of this very soluble, and, therefore, easily decomposed salt, sulphate of soda was suggested.

In the *British Journal of Photography*, the following receipts were given as good:

Take four parts silver nitrate, precipitate it with citrate of potassium as silver citrate, press the remaining fluid carefully out (into the residue), dissolve the citrate in a minimum of nitric acid and add it to 100 parts of the usual silver bath (1 : 10).

2. Let the sensitized paper, after a silver bath (1 : 10), float upon a citrate bath (1:9½) on its back for some seconds, and then dry it out well.

3. Proceed as in No. 2, only use a bath consisting of 1 part citric acid, 2 parts best gum Arabic to 15 parts water.

Fuming.

The fuming of the paper in ammonia before printing is always necessary if brilliant prints are to be obtained, notwithstanding a weak silver bath and light burnishing, and also when washed prepared silver paper is used.

This fuming with ammonia is also to be recommended for the printing upon salt, arrow root, and algæ paper, when very strong, rich prints are desired.

It is usual in America to have a dish of concentrated ammonia sitting on the floor of a close closet, where the silvered and dried paper is hung up carefully and allowed to remain one hour.

In order to save hanging up in the fuming box, some have tried to saturate the blotting paper of the printing frame with ammonia vapor, so that the fuming can go on at the same time as the printing. A pad so prepared will, however, scarcely last longer than a day.

A better method than this (see *Photogr. Wochenblatt*, x. page 99) is to put a layer of carbonate of ammonia into the pad in this way: Have it well pulverized between two layers of cloth of the same size as the pad; the under one of these layer should be a piece of linen facing; the upper one, a piece of oiled silk—thus serving against damage from the outside, and also preventing the entrance of moisture from the air.

The advantages derived from fuming are not unimportant; for, even when very weak silver baths are used, brilliant prints can be obtained, the printing itself can be done quicker than without it, the toning in the gold bath follows rapidly and easily, and, finally, no blisters appear in the washing after the fixing when the fuming has been sufficient.

The Printing

upon albumen paper requires attention to several matters:

1. In changing the light-sensitive papers the prints should be carefully protected from stray light, and they should always be kept in a flat condition, and not rolled inside out.

2. The greatest care should be paid to the intensity of the light, so as to obtain the best effect possible in the prints.

3. The temperature of the printing room should not be too low.

No. 1. An error is often made in this regard by belief in the relatively great insensibility of albumen paper, since the changing is done in full daylight, and the finished prints are not even kept in sufficiently light-tight boxes in the bright printing room.

In the actual opening of this keeping-box all the prints receive again stray light. The pure whites are thereby always in danger.

The keeping in a flat condition is much more important than one thinks. The paper in a dry condition is naturally very brittle, in so much as it is composed of an innumerable quantity of little microscopic crystals of nitrates of alkalies and of silver. If the paper is rolled up inside out and left to dry out more, then the albumen layer is injured in its coherence by the hard nitrate crystals. In unrolling, which can only take place in this condition with a certain amount of force, a number of fine cracks and flaws occur in the albumen which cannot be seen in the half dark in which one is compelled to work. When these pictures have gone through all the operations, the faults are first apparent in the mounting. Then, however, in such pictures there is not much to save.

It cannot, therefore, be too highly recommended to keep the dried paper and the finished prints laid flat in portfolios. This can be easily accomplished by furnishing these portfolios with layers of strong cardboard, which contain broad bands stretched across. Under these bands the print (with the albumen side turned to it) is pushed, and is thus held down by the bands and no opportunity given to roll up at the corners or anywhere.

Whoever does not favor portfolios, could, at least, use for smaller pictures pasteboard boxes more long than broad; but the prints must be rolled from outside or laid in these boxes so that they will not roll up on the inside.

The methods by which all the pictures thrown into a box or drawer, where they instantly roll up together, are particularly to be avoided, since they always give rise

to cracks and flaws, if the albumen layer is thick and very glossy.

No. 2. It is the general and recommendable custom to print in the shade, so as to make use of the dispersed light of the sky; this can be altered according to whether the printing is done in the air or in a room. The common and valuable rule that weak negatives should be printed as slowly as possible and with very weak light, and, on the other side, thick ones with very intense light, is far too little observed. For particularly thick negatives, it is of advantage to have the reflection of brightly-lighted white walls, and only rarely should direct sunlight be used for printing, but one should lay a piece of tissue paper on the printing frame. Such prints made in intense light always leave something to be desired in strength and depth of the shadows, so that they must always be printed more deeply than is usual.

If one has weak-toned negatives to print from, then all side lights should be avoided, for the light in such cases should always fall vertically. If the light reflected from a white wall is used, the printing frames must be placed exactly perpendicular to the direction of the rays.

No. 3. If the printing frame has been properly prepared in a warm room with apparently well-dried paper and dry pressing-pad, then this dryness is only a relative one—that is to say, serviceable only for the warm room. For as soon as the frames are exposed to the cool air, the paper appears to get "tender," or even moist. Thus it happens that the paper get creased and prints weak.

The cause of the paper, which in the warm room was "dry (?)" where no unusual moisture entered, becoming soft in the cold, lies in the fact of the pad containing much air, partly in its capillaries, and partly clinging to its upper surface. This contains, in the warmth, a certain quantity of water absorbed into itself, but it cannot hold it in the cold, and must, therefore, give it forth to the paper placed above it.

Whoever is compelled to print in the air in winter, should, at least, to prevent the influence of a moisture-holding press-pad, lay between it and the paper a piece of oil-skin or caoutchouc cloth.

The inspection of the print must also be done in the air. Should the printing frame be brought into the warm room, then in opening the cold frame together with the cold press-pad, the paper and the negative would begin to run—that is to say, they are covered with moisture, as a glass of cold water is covered in a warm room. The consequence is, then, that the side examined, owing to the greater quantity of moisture, prints differently from the other dry half of the picture, and eventually expands and gets folds, producing a concave print.

The Toning of the Albumen Pictures.

Washing as a Preparation of the Pictures for Toning.—Before the toning, the albumen pictures must first undergo a washing in often-changed clear spring, river, or rain water. This is to be done, if possible, in the dark. The first two wash-waters are to be worked with muriatic acid for silver.

The purpose of this frequent washing is the removal of that surplus of nitrate of silver, which, in the sensitizing, remains in the albumen layer and paper fibre and dries into them.

Should this nitrate get into the gold bath, not only would too much gold chloride be unnecessarily decomposed, respectively to be transposed into chloride of silver and gold oxide, but the gold bath will become acid by the nitric acid freed.

The wash-water becomes a more or less milky color, in consequence of the transformation of the dissolved nitrate into carbonate and chloride of silver; the harder the wash-water is, so much more does the muddiness appear.

So long as the water is muddy, the washing must be continued with fresh water.

Waters containing iron or sulphur must be entirely avoided.

Many photographers add kitchen-salt to the wash-water. They obtain by this means the transformation of the nitric salt into chloride of silver. Since this transformation in part goes on within the albumen layer, the latter, in consequence of the new chloride precipitate, is colored lighter—that is, redder.

This addition of kitchen-salt has very little influence on the appearance of the finished pictures—the tone, as the depth of the picture, remains just the same whether it is added or not. There is an advantage in its use to those who are not able to avail themselves of the perfection of coloring. Since, especially, the pictures are colored redder by the salt, the difference from the pictures colored violet is noticeable. The salt furnishes no other advantage. On the other hand, it has this disadvantage, that the pictures are longer in toning and turn in the fixing.

In using the chloride of lime toning bath, there is an exception to the above directions; the pictures must be washed as completely as possible. For in this bath there is obtained only a quickly fading tone if the pictures are not completely freed of nitrate.

(To be continued.)

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 372.)

For Transparencies and Lantern Slides.

Very fine effects are obtained by adding one drachm of the following to the developer given above as Ripley's:

Sulphite of Soda Crystals	3 ounces.
Bromide of Ammonium	30 grains.
Citric Acid	60 "
Water, enough to make	10 fl. ozs.

Carbutt's formula, as below, also produces fine effects:

A.

Oxalate of Potash	8 ounces.
Water	30 "
Citric Acid	60 grains.
Sol. Citrate of Ammonia	2 ounces.

B.

Sulphate of Iron	4 ounces.
Water	32 "
Sulphuric Acid	16 drops.

C.

Citrate of Ammonia Solution: Dissolve 1 ounce of citric acid in 5 ounces of distilled water, add liquor ammonia until a strip of litmus paper (red) just loses the red color, then add water to make the whole measure 8 ounces.

To develop, add 1 ounce of *B* to 2 ounces of *A*, and ½ ounce of water; then add 3 to 6 drops of bromide solution (bromide of potash 1 part, water 9 parts).

Hydrochinon Development.

Though known and used for some time, hydrochinon has lately rushed to the front *sine qua non* of developers, and was bound to dethrone pyro from its well-earned seat; but, unfortunately for its too-eager advocates, this dire result has not as yet occurred, and for various reasons: Too much was claimed for it; much longer time is required in development—a serious objection to most Americans—and, in some cases, pyro had to be called in to assist; and then it was more expensive than pyro. But in the development of lantern slides and transparencies, it has found, and doubtless will still find, much favor, from the warm tones and delicate gradations that it is capable of giving to these positives.

The following formula produces fine effects:

No. 1.

Soda Carbonate (Cryst.)	60 grains.
Water	1 ounce.

No. 2.

Hydrochinon	12 grains.
Soda Sulphite	60 "
Water	1 ounce.

For use, mix

No. 1	1 ounce.
No. 2	2 ounces.
Water	1 ounce.

The water should be either warm or cold, according to the season, in order to give the developer its proper temperature.

Prof. Newton, Vice-President of the New York Society, proposes the following, which he claims will last about four weeks, will not stain the hands, make clean, crisp, negatives of good printing quality, and by the addition of a sufficient quantity of water will answer admirably for lantern slides:

Lime Water	1 ounce.
Sulphite of Iodine (Cryst)	20 grains.
Hydrochinon	5 "

I have not tried this new developer, but from what I know of this veteran and accomplished amateur, I am satisfied that what he claims must be so.

A Handy Fixing-bath.

Saturated solution of hyposulphite of soda. For negatives, 1 ounce of this, to which is added 8 ounces of water and 1 drachm of sat. solution of bicarbonate of soda. For prints, the same as above, but increase the water to 12 ounces.

Blue Prints.

Formula of the School of Mines, Columbia College:

Sensitizers.

No. 1.

Ferricyanide of Potash .	539 grains.
Distilled Water . . .	8 ounces.

No. 2.

Citrate of Iron and Ammonia	816 grains.
Distilled Water . . .	8 ounces.

These solutions must be kept separate: When ready to prepare the paper, mix equal parts of No. 1 and No. 2, and apply to the paper with a sponge or soft cloth, and hang up to dry. These operations must be conducted in a dark-room. As soon as the paper is dry, place under a negative and expose to direct sunlight. After printing, place the print in clear water, and wash thoroughly.

Fortress Monroe School.

No. 1.

Iron and Ammonia Citrate	1⅞ drachms.
Water , . . .	1 ounce.

No. 2.

Potassium Ferricyanide .	1¼ drachms.
Water	1 ounce.

Dissolve separately, and keep these solutions in yellow glass bottles, away from the light.

For use, mix equal quantities, and apply to the paper with a soft rag, and hang up to dry.

In case this does not give clear whites and deep blue, after exposure soak the print for thirty seconds, in water to which one drop of liquor ammonia has been added in the proportion of 1 drop to 8 ounces of water, then wash well in running water. The paper prepared by this formula keeps better than that prepared by the former. In both cases the paper should be kept in a flat box, in a dry place, and in the dark.

Intensification.

If your plate has been so much overexposed that even a restrainer in the development does not prevent a thin, flat negative being the result, after fixing and hardening the film by an alum bath, it should be intensified. Prof. Newton's intensifier has been previously recommended as being the one most suited to the young amateur. I have found the following of good use: First bathe the plate in a saturated solution of bichloride of mercury (corrosive sublimate) until the film commences to turn white, then wash quickly, and plunge the plate into a bath of a saturated solution of sulphite of soda, when it will quickly turn a dark purple color. The plate should be rocked whilst in both of these baths, to prevent markings. Wash well, and rack it up to dry. One advantage of this method is that it can be repeated several times, until the required density is obtained.

A good way to obtain local intensification, which is sometimes required, is to surround the part requiring it by a ring of vaseline, and apply Prof. Newton's intensifier to the part requiring it. The vaseline can be removed easily afterwards.

Reduction

Is sometime necessary for very dense negatives, or for the high lights of underexposed plates, either as a whole or some parts thereof, and for this purpose I use a modification of Farmer's process:

Potass. Ferricyanide (Red Prussiate of Potash) . . .	3 grains.
5 per cent solution of Hyposulphite of Soda	1 ounce.

In this the plate is bathed until the desired reduction is obtained, and should then be well washed. For local reduction the part or parts requiring it should be painted with the solution by the use of a camel's-hair pencil or brush.

Toning Baths.

Of the various baths for toning the silver print, as far as I have used them, and a goodly number of them, too, I prefer, for steady work, giving reliable tones, and easily worked, the following, in the order given.

Tungstate of Soda Bath.

Tungstate of soda (purified) 160 grains, dissolved in 8 ounces of boiling water—the water to be kept boiling until the soda is entirely dissolved—then filter, and add 1 grain of chloride of gold dissolved in 1 drachm of water. This bath is ready for use as soon as cool enough, and will give tones from a dark warm brown to a deep black. From time to time add 1 grain of the chloride of gold previously neutralized by 2 or 3 grains of tungstate of soda. The bath will keep for a long time. I saw prints toned, and toned well, in a bath of this kind, that was more than a year old.

Borax Bath.

No. 1.

Chloride of Gold . .	15 grains.
Water	15 ounces.

No. 2.

Borax	120 grains.
Hot Water	20 ounces.

To tone one sheet of 17 x 22 inches, take of No. 1 one ounce, and eight ounces of No. 2.

Phosphate of Soda.

Chloride of Gold . .	1 grain.
Phosphate of Soda . .	25 grains.
Water	8 ounces.

Chloride of Zinc.

Chloride of Gold . .	1 grain.
Whiting	20 grains.
Saturated Sol. Chloride of Lime	1 drop.
Hot Water	8 ounces.

I would recommend that you either purchase the preparation known as the liquid chloride of gold, or make your own, preferably the latter. The admixture of chloride of gold and soda, that comes in small glass tubes or bottles, said to contain equal proportions of gold and soda, has always proved uncertain to me, causing thereby disappointment in obtaining the desired tones in the prints. Generally, there is more soda than

Mutilation reported,
May 1894.
K.

The case cannot be treated as being within the domain of "art" in its higher acceptation. The contract was not for an original portrait or landscape, nor for a "copy" of anything from a great master. It was to produce one million small pictures, by the photo-gelatine printing process, a process chemical and mechanical in its nature, requiring the labor of artisans rather than artists. The work was for distinctly commercial purposes, not even to be sold as pictures, but to be used in "advertising" cigarettes—that is, to facilitate their sale by offering an additional inducement to such purchasers as would be pleased to find in each package a pretty female face, or the attractive outline of a well-developed female figure. That the samples, the knowledge of plaintiff's of the intended use of the pictures, and the correspondence amount to a warranty, I have no doubt. As illustrating the doubts and mutations of judicial opinion, as to the effect of such a warranty on the rights of the vendee, see

2 Hill 288.
4 Hill 625.
1 City Court 171.
14 N. Y. 602.
52 N. Y. 416.
54 N. Y. 591.
106 N. Y. 93.
4 Hun. 230.

The question seems to have been set at rest in 99 N. Y. 529, where it is distinctly held that in cases of executory sales with warranty, the vendee, on breach, may either return the goods, or keep them and rely on the warranty. In this case the defendant's letter of rejection and notice that the pictures were subject to the order of plaintiff, was the equivalent of actual return.

The question which dominates all others in the case is: Was the defendant justified in rejecting the delivered pictures? If so, the defendant must succeed on the whole case; if not, the plaintiff must succeed.

This involves two questions: What is meant by compliance with samples? and, did the plaintiff sufficiently comply?

I have found in adjudged cases and standard text-books various words and phrases to express what is meant by a sale

by sample, and of compliance with, or conformity to samples. Such as "average;" "average of bulk equal to average of sample;" "substantial compliance with;" "where the bulk does not correspond;" "substantially satisfy the description;" "amounts in judgment of law to a warranty on the part of the vender that the bulk corresponds in quality;" "is an implied warranty that the sample is a fair specimen of the goods;" "contains an implied warranty that the bulk of the article sold corresponds with such sample." "In a sale of goods by sample the vendor warrants the quality of the bulk to be equal to that of the sample." "Amounts to an undertaking on the part of the seller with the buyer that all of the goods are similar, both in nature and quality, to those exhibited."

It is observable how often the word "bulk" is used; and in none of the expressions does a literal and exact *sameness* or *precision* of resemblance find place.

In Leonard *vs.* Fowler, 44 N. Y. 289, which was a sale of beans, the court said:

"If the goods sold consist of several varieties and qualities of the same article, and the sample is made by mixing proportional parts of the different varieties and qualities, the warranty is that the whole quantity, if mingled together, would be of a quality equal to the sample." Notwithstanding the wide distance between beans and pictures, that case throws light on the question in hand. Here there was one process of making pictures, and in that sense no variety. So in the case cited, there was but one article or vegetable, and in that sense no variety. But there were varieties of the one thing—beans. And here there was a variety of pictures, there being many "subjects," about 160, from which negatives were to be taken. Sheets were to contain 24 pictures each. Some of the subjects were much lighter than others. Subjects had to be grouped together in sheets. The samples themselves are of different degrees of darkness. Yet the work was to be as dark as the samples. To make reproductions of the lighter subjects as dark as the average of the samples would have spoiled the copies of the lighter subjects, and possibly in the nature of the process would have spoiled the darker ones also, by making them too dark. We thus see the extremely complicated nature of the problem of compliance, the impossibility of literal and exact compliance, and the necessity of some general rule to determine such a case.

It is further complicated by the fact that while "brilliancy" was not a feature mentioned in the correspondence which forms the contract, yet it was largely gone into at the trial as being an important element. It seems that brilliancy depends not so much on darkness or depth of color, as on *contrast* between light and dark; so that a very dark picture, with less contrast, less *relative* difference between light and shade, would be less brilliant than a picture which was lighter in its total make-up, but with more contrast in shade, more of relative difference. Thus, if brilliancy were the controlling question, it not only might, but would often occur that of two pictures, the lighter would be more brilliant than the darker one, by having more contrast. And, again, another complication arises from the fact that accompanying the samples, was a sheet of photographs *not used as a sample*, but only to illustrate the character or style of pictures desired, this sheet of photographs being, on the whole, somewhat lighter than the actual samples, but having the quality of "brilliancy," and photographic work being generally of a finer and higher quality than photo-gelatine printing, so that this work was not expected to be quite so good as those photographs, but to resemble them in effect.

If the plaintiff must deliver pictures as dark as the samples, he cannot do it. If he make them darker, and does so, he takes the risk of being met with the objection: "I told you not to make them so dark as to be bad."

Taken literally, and exacting a literal compliance, the plaintiff had a contract not only hard to be performed, but impossible of performance. The parties seem to have understood that such work is liable to be, and usually is, reproduced with shades of difference. But the proof in this case shows that exact and literal copying is never achieved.

Just here it may be useful to enquire what

degree of badness, or variance from sample, would have justified a rejection of a bundle of one hundred cut pictures under the original contract. Evidently any such defect as wrinkles, scratching, or other defacement palpable at first view, would make a bad picture, and justify rejection. And very marked defect in shade or color, whether the picture be too light or too dark, would have justified rejection. One bad picture in a bundle of one hundred would have justified the rejection of that bundle.

But the plaintiff delivered no cut pictures in bundles. Before such delivery was commenced the contract was modified, so that, in consideration of a reduction of fifteen cents per thousand in price, the defendant was to do the *cutting*. Did that amendment or modification of the contract devolve on the defendant any duty or labor other than the cutting? The agreement to cut was based on a valuable consideration—the reduction of fifteen cents per thousand in price. Did that consideration pay for anything else? or involve anything else?

As it seems to have been quite understood that imperfect, even bad, pictures might, indeed of necessity, would, to some extent, be mixed in with good, as the sheets came out in the process of producing them, I shall hold that the defendant, in agreeing to cut the pictures, did, by implication, take upon himself the duty and the labor of sorting out the bad ones. The right of rejecting pictures deliverd at any one instalment, on account of badness of the work or a part of it may have remained, but it was not the strict right of absolutely rejecting one bundle of one hundred that contained *any* bad pictures. The reasons for that form of delivery have been explained in the evidence, and need not now be repeated.

But this view or construction of the contract as amended—that when the defendant agreed to do the cutting, he impliedly agreed to do the picking out of bad pictures, must be applied to the facts of this case within reasonable limits. It would not allow the plaintiff to impose on the defendant an unlimited amount of labor in selecting and rejecting bad pictures. The proportion must not be too large.

Might the defendant rightfully reject a delivery for the reason that a portion of the pictures, good in other respects, were a shade lighter than the samples? If he might, then the defendant's rejection was justified, because I shall find as a fact that a portion of the pictures delivered were lighter than the samples. And if he might not reject for being a shade lighter than samples, then what proportion of otherwise *bad* pictures would justify a rejection—that is, what proportion of bad pictures did the defendant undertake to eliminate from instalment deliveries in agreeing to do the cutting?

As to the first question, it would be impossible to say with certainty how many, or what proportion of the prints were not as dark as the samples, for the simple reason that different persons, with visual organs differently endowed or constituted, would differ very widely, as witnesses actually have in this case. But in my opinion, if it must be held as matter of law that a slight variation would be sufficient, then there were enough of them to justify the rejection. But I do not take that view of the law. Considering the state of the art, the impossibility of making fac similes in large numbers, or at all, a fact the defendant seems to have known, it would seem to make this case one of that class, that where a large number of articles are to be produced, according to sample, and especially when the process is printing, either from type or plates; the test is, and must be, was the work a fair average compliance with the samples? Since to require an exact compliance with sample is not practicable, and people would surely differ as to what was an exact compliance, the rule of law must be as above stated, or compliance with such contracts would be impossible; and neither party to a contract will be deemed to have required or promised an impossibility. Of course, a marked and palpable departure from samples, in a large proportion of the work, in the matter of color, would not be a compliance, though the lighter prints might themselves, in the judgment or taste of experts, be as good in artistic merit as the samples. Artistic merit was not the only thing contracted for. Color, or darkness of shade, was contracted for as well. On this question I find that there was not a

sufficient departure from samples to justify the rejection.

As to the second question, having taken the view expressed above as to the effect of the modification of the contract, I shall find that in the work delivered there were some pictures absolutely bad, worthless for any purpose, by reason of defective mounting and of mechanical injury, such as abrasion and adhesion of foreign substance, and a few so palpably lighter than the samples that the plaintiff could not be entitled to receive any pay for them; but in view of the small proportion of such prints, and the selection of nearly all of them by the plaintiff's inspector by marking them with a blue pencil, a ready means to guide in detecting and rejecting them, that the proportion was not large enough to justify the rejection—that is, that it was not so large as to make it unreasonable that the defendant should have them selected and discarded in cutting the sheets.

In that spirit of perfect candor in which the whole trial was conducted, counsel on both sides agreed at the argument that there could be no partial recovery or partial defense—that one side or the other must succeed entirely. I was not then of that opinion. I was inclined to think that if the plaintiff could recover at all it could be only for the work actually delivered, because there was no delivery or tender, within the sixty days, of the balance of the work. The cases of Van Sickle *vs.* Nester, 34 Hun. 64, and Canda *vs.* Wick, 100 N. Y., 127, hold the opposite rule—that a wrongful refusal to accept an instalment delivery is such a breach as puts the vender at liberty to treat the contract as broken, and relieves him of the duty of continued, or any further tender; thus taking such cases out of the operation of the rule laid down in another line of cases, that where the contract is entire, and performance must be completed before payment is due, a part performance does not entitle vendee to payment for the goods delivered or the work done. Those two cases seem to hold that on a wrongful rejection of a part, the vendee may recover for the partial delivery and his damages on the contract. A kindred principle is applied to a different state of facts in Risley *vs.* Smith, 64 N. Y., 576.

I have been at more pains than usual to state my views of the case, so as, if possible, to facilitate a review of the findings.

If the fact that the work delivered was fit for the purpose for which it was intended, without regard to the samples, would entitle the plaintiff to recover, I would deem the case clear. But I have not believed that to be the vital question in the case.

If the fact that the work delivered was in the main good and merchantable work of its kind, would entitle the plaintiff to recover, I would deem his right clear. But I have not considered that the question in the case.

If the finding that the work delivered would average as well as the samples be erroneous, then the rejection of it was justified, and the defendant should recover.

If the application of the rule of average quality, or quality of the bulk, as to color or darkness, be wrong; and if, as a matter of law, all the pictures should be quite as dark as the samples, so that a portion, good in other respects, being somewhat lighter than the samples, the defendant, as a matter of law, had the right to reject the delivery, then the defendant should recover.

If the construction placed upon the amendment of the contract, that under it the defendant had the duty of selecting and discarding bad pictures; or, in other words, that it still remained the duty of the plaintiff to deliver all good and no bad pictures, the defendant should recover.

If that construction be correct, and yet the finding of fact that the bad pictures did not exceed the ordinary limit, and a reasonable limit, be erroneous, the defendant should recover.

Some of these are questions of fact, and some are questions of law.

The questions of law could be reviewed on a case of limited dimensions. But it is to be regretted that, owing to the volume of oral testimony, the vast number of exhibits, and the necessity of using the originals, owing to the impossiblity of exactly producing them in a case, a review of the findings of fact would be so difficult; the decision now indicated having been reached after much doubt and very great perplexity.

Deeming that each side should have the advantage of excepting the refusals to find requests just as made, I have refused several

requests as a whole for both plaintiff and defendant, indicating in a memorandum what was deemed the objection to the request, and with what amendment or alteration it would be granted.

The report may be prepared in accordance with findings, as granted.

CONVENTION POINTERS.

The Air Brush Manufacturing Company will be represented by an expert at the Convention, and all artists whose Air Brushes may be out of order are invited to bring them, and have them adjusted without charge.

Conventioners, Attention! The fraternity of Minneapolis and St. Paul will tender to the visiting photographers and ladies, July 10th to 14th, a free excursion on the beautiful waters of Lake Minnetonka, the particular day to be hereafter decided.

The magnificent steamer "Belle of Minnetonka" will be used, and a complete tour of the lake made, giving fine opportunities for the use of the camera. Music will be furnished and everything done to make this a "*never to be forgotten*" occasion by our visitors. It will surely repay a long trip over a dusty road, and *no* photographer can afford to miss it.

This boat load of "*Novelty in Art*" will be photographed at some one of the many pretty places on the lake, and everybody is expected to put on the right "squint." Now, *all* ready, *go*. A. B. Rugg,

Secretary.

Acme Burnisher Co.'s Prize.—Individual prize offered by the Acme Burnisher Co., of Syracuse, N. Y., at the coming P. A. of A. Convention to held at Minneapolis, Minn. We offer one of our latest, improved, twenty-six inches, Acme Burnisher as a special prize for the finest display of plain portrait photography from an artistic point of view, regardless of the size and number of pictures exhibited. Judges will be appointed at the Convention. We will have the twenty-six inch burnisher at the Convention, and it will be delivered after the decision of the judges.

WALLACE GOOLD LEVISON.

ON

AN AUTOMATIC CONTINUOUS CAMERA FOR TAKING SERIES OF PICTURES FROM ONE POINT OF VIEW ON PLATES OR FILMS.*

The camera that I have the honor of presenting to-night is probably the first ever constructed for taking a number of pictures in rapid succession on separate regular dry plates, and it was made over a year ago. As it is chiefly my own work it is wanting in accuracy of construction, yet I am able to exhibit a set of pictures selected from several trial sets which show that when carefully constructed the camera will operate admirably. This particular set of pictures shows Mr. Edgar J. Taylor throwing a stick upward and catching it by the other end, all these pictures being taken during the excursion of the stick. In this camera 3¼ by 4¼ plates are used. They are carried in compartments on a polygonal wheel which is caused to move onward and rest by a peculiar screw motion, and at each rest an electro-magnet actuated by a suitable battery operates the shutter and exposes the plate there in proper position before the lens. The plates may be changed quickly and in full sunshine by the method used in the Brainerd hand camera.

As the object of presenting this matter to-night is merely to announce that such a camera has been constructed, and pictures taken with it, its details of construction need not be minutely described. In taking trial sets of pictures, twelve plates might have been used, but three were considered sufficient.

I constructed this form of camera to employ plates, to afford Mr. J. M. Cornell a means of making certain physiological studies, and also for certain astronomical work, in which paper or film, owing to its expansion and contraction, would hardly be applicable. But the mechanism employed to drive the plate-carriers in this model could be applied, as shown in the

* Read before the Brooklyn Academy of Photography, June 13, 1888.

drawing on the screen, to operate a continuous strip of paper or a film-carrier, and by a simple modification of the contact switch the shutter may be operated indefinitely. With a camera thus constructed a series of pictures, limited only by the length of the sensitive paper, may be taken. If taken at the rate of twelve per second, which is a speed that the mechanism will probably permit, as many as 43,200 pictures would be obtained per hour by the camera thus modified. The Eastman paper is now, I am informed, furnished in rolls affording 100 pictures, which is perhaps as many as any application of the camera at present projected would require. At least it is enough to develop at once by the present methods of development.

This camera is peculiarly adapted for taking series of pictures of objects moving vertically, such as acrobats, tossing balls in the air, by means of which the same motions can be reproduced in the zoetrope or the zoöproxiscope. The apparatus employed by Mr. Muybridge was not adapted for these subjects, but it seems that he has lately turned his attention in this direction, for he has suggested to Mr. Edison that a camera of this kind can be used to photograph the gestures of a speaker, while at the same time a phonograph would record his speech, and afterward by a combination of the phonograph and the zoöproxiscope the speech can be repeated, and at the same time the action of the speaker can be reproduced upon the screen. The camera I have described would take the photographs necessary for this purpose. This camera promises to be of most importance for recording such astronomical phenomena as a transit of Venus or eclipse of the sun, but applications of a new instrument develop with great rapidity once it is perfected, and its ultimate uses cannot all be foreseen.

Editor's Table.

The Suter Lens.—Our readers have become very familiar with this excellent instrument, and know full well its advantages, as many of them have it in their studios. We expect the attendants upon the Minneapolis Convention will be treated to some foreign pictures made with this lens on Mr. Carbutt's orthochromatic plates. Mr. Carbutt speaks in high praise of an interior of Exeter Cathedral, especially, taken with the Suter lens.

Messrs. Buchanan, Bromley & Co., have found it necessary to issue their instructions for using W. & C. preservative in Spanish. A great deal of business is done with the Spanish speaking people now, and we have a long list of subscribers among them.

Mr. Ira F. Collins, of Huntsville, Ala.. is one of the growing photographers of the South, and receives a great deal of praise from the *Mercury* and other papers.

B. H. Charles, of Chicago, has sent to several of our readers a postal card announcing a process for electric-light enlargements. We know nothing of him, and cannot get any information concerning him. We advise our readers in this case, as we have always done, to beware of the process-seller.

We have received from Prof. H. T. Bailey, N. Scituate, Mass., the fifty-first report of the Board of Industrial Education, which contains interesting matters for all those who have the education of youth in contemplation.

Will correspondents kindly direct our letters properly? We have one from Detroit, probably by a *Free Press* reader, directed to the Philadelphia Photographer, 853 Broadway, Philadelphia, N. Y. Frequently, however, we have letters delayed or lost by carelessness of this kind.

Mr. D. T. Burrell, of Providence, R. I., has favored us with some very excellent flash-light pictures of theatrical interiors. In one, the two gymnasts, the Vaius Sisters, are caught in mid air as they whirl on their trapeze. Another of a scene in "Our Boys" has ten actors on the

stage, several of the orchestra and a line of the audience in front. They are excellently taken and show the wonderful capabilities of the flash light.

Our Out-door Number.—The beautiful landscape picture of Mr. Mowrey, his article on out-door work, and the contributions by Messrs. Pray, Janeway, and Pringle, give our current number a decidedly out-door feeling which we hope will do good.

The excellent paper by Dr. Eder on orthochromatic collodion emulsion was generously sent us by the distinguished author, and will be found an important advance in that direction. Doubtless great growth lies here and should not be overlooked.

Alpha Paper.—A paper with a mat surface that can be printed by contact and yield any desired tone, will be accepted with joy by our artistic printers, and it is very near at hand. One of the firm manufacturing it in England is now in our country negotiating for an agency, and it will soon be in the market.

Mr. D. J. Smith, the veteran photographer of 210 and 212 Woodward Ave., Detroit, Mich., has sold his gallery to Messrs. Shipley & Ladd. Mr. Ladd has for the last seventeen years been the operator in the old "Powelson" gallery, and will make a worthy successor to Mr. Smith. We wish every success to the new firm.

W. Irving Adams, Esq., the popular agent of the Scovill Manufacturing Co., has recently made a visit to Chicago, and comes back with a good deal of fresh news which he ventilates in the *Times*. He was "delightfully entertained" at a meeting of the Chicago Lantern Slide Club, and the beauties seen there seemed to be a revelation to him.

From Mr. Irving Saunders, of Alfred Centre, N. Y., we have received some bromide prints of portraits of negro minstrels. They are excellent in pose and of fine quality.

While our current number is being enjoyed by its readers, *The International Annual of Anthony's Photographic Bulletin*, and *Anglo-American Photographers' Guide* for 1888 will be on its way to purchasers. We shall review it fully in our next. It will undoubtedly be a great success.

If any of our subscribers have our issue of December 3, 1887, which they would like to exchange for other numbers or other books, we will be glad to hear of them, as we need some copies for those who wish to complete files.

Mr. H. A. Hyatt has filed suits in the U. S. Circuit Court against D. F. Hulbert, of the firm of Hulbert Bros., and Chas. H. Tondorff, an employee of the firm, for infringement of the stamp-portrait patents and apparatus. There are two bills. Mr. Hyatt assures us that he "means business and will protect all those who obtain territorial rights from him." Get his circular. Money to be made on stamps during election.

Photo engraving is having an immense boom. The new book is going well. Some important hints are given in our current issue, that have just been received from England, and soon we shall present our readers with some marvellous results from Mr. Kurtz. We shall place the highest examples before the workers so they may know to what they must attain.

Mr. P. F. Carriere, of New Orleans, has sent us a lovely picture of a little boy seated as "the man about town" usually is, in the evening, enjoying his newspaper, with pipe in mouth and newspaper in hand. It is very natural and an excellent composition.

Mr. C. D. Irwin, of Chicago, has sent us a number of prints from his negatives made in Japan during a recent visit there. They are of excellent quality and chosen with true artistic instinct. Their variety also shows that Mr. Irwin was determined to have a complete series illustrating life among that wonderfully bright and intelligent people. Some views, equally excellent, of India accompany the lot.

A Fine Composition.—Mr. Lorin E. Miller, Alliance, Ohio, has favored us with a 14 x 17 picture which he calls "Suspicion." The subject is a priest standing at the closed door of a convent with his ear close thereto, listening. The attitude, expression, and arrangement are all very natural and excellent. The background representing the door and the wall of the building, and the floor of rough hewn stone were all painted in Mr. Miller's own studio. The whole composition shows careful conception and skilful execution. If we desired to criticise it at all, we should only find fault with the uniformity of the lighting; but when a man writes to us, "I am under great obligations to you for placing

in my hands such a grand work as Burnet's *Art Essays*," then we know that the proper managing and balancing of light and shade is but a little distance away from the writer. We wish him great success in his artistic studies and achievements. A second picture of a young miss reclining on a bed of field daisies is also fine.

Rather Amusing.—Prof. Karl Klauser, of Farmington, Conn., writes us that his little hint in No. 309 of our magazine on the use of ashes of cigars, etc., was repeated on page 343 with the substitution of sugar instead of cigar ashes, and credited to a foreign journal. The learned professor suggests that "the moral of this is, 1st, that the editor of a photo journal must be hard up for material, and 2d, that any suggestion of a practical nature travels faster and is more appreciated than a theoretical discussion." The last part of his "moral" is true, the first is not. The modern editor must read no less than thirty exchanges. To remember all that is published in them, and not repeat, would be more than human. His trouble at present is to boil down and out *what is best*, and *not* to find sufficient material. But we would rather repeat than omit any good thing.

Mr. L. C. L. Jordan, Assistant Secretary, has kindly favored us with a copy of the twenty-ninth annual report of the Cooper Union for the Advancement of Science and Art.

Buy Book-helps. On a recent visit to our city, Mr. C. H. Monroe, Jamestown, N. Y., subscribed for our magazine—1887 and 1888—and purchased Burnet's *Essays* and *Quarter Century*. He now writes as follows: "You can't imagine the good those books have done. I do not see how I ever got along without them. If every one knew the worth of them as I do, there would be a complete set in every studio from Maine to California.

The Gundlach Lenses.—Steadily and surely as the growth of photography, has been the growth into favor of American lenses made by the Gundlach Optical Co., of Rochester, N. Y. During a little "outing" which we took recently, we accomplished some wonderfully satisfactory results with them and Mr. Carbutt's orthochromatic plates. We desired a lens that at short distance would secure us some figure pieces and "bits" of large size, on small plates for photo-engraving, sharply but distinctly—such bits as Mr. Mowrey recommends in his excellent article on another page. Our results were most satisfactory in every way. Sharp, brilliant, and (considering the photographer) excellent. The new advertisement of the Gundlach Optical Co. will give our readers some fresh information concerning their lenses.

To Japan.—Two copies of *Photo-engraving*, etc., have gone to Japan, and one to Guatemala. Several to Australia—already.

If you have little folks from five to nine years old you can give them more pleasure for ten cents by getting a copy of July *Our Little Men and Women*, than in any way we know of. The July number is full of pictures of all sizes, short stories, and pretty verses. You can get it at the newsdealers, or of D. Lothrop Company, Boston. $1.00 by the year.

Charles Scribner's Sons have published in connection with the railway articles appearing in *Scribner's Magazine*, a pretty lithographed folder, entitled "Twenty Questions and Answers about Railways." The information contained is interesting, and has been obtained from well-known authorities. It can be obtained by enclosing a stamp to the publishers.

A Curious Case, with a Moral.—The District Attorney of Silver Bow Co., Montana, is at present collecting evidence to convict a prominent man of Butte City who was hunting with his gun for wild game. During his hunt he came across some ducks which, under the Territory law, come under the game law, making penalty for killing game out of season. Of course the game-hunter thought he would not be detected with the game if he went home and used them himself; but on reaching Butte the idea struck him, "I have a pretty good hunting suit, a fine dog, and a not so awful bad-looking gun; I have always been wanting to get a photograph in my costume with some game, etc." He went to one of the leading galleries there and had himself and the whole business photographed, When the photos were completed he showed them around, not thinking of "game out of season." The photo was looked at by a member of the Butte Rod and Gun Club, who informed on him for killing game out of season, the proof being a photograph. Result—a suit.

Some interesting matters are taking place at the meetings of the Photographic Society of Philadelphia, but we are not favored with the reports until after they appear elsewhere. And

the editor of this magazine is one of the older members of the Society, too.

Now is the best time, if you are so unfortunate as to have delayed, to try the Brown & Goldsmith "Success Sensitized Paper Preservative." It is the greatest comfort to the printer to feel that he has a ready and sure means of keeping his paper white. The advertisement elsewhere explains it all. The want of such a means will cause you to read and the surety will compel you to try what you will not soon give up using.

Mons. Leon Favre, 236 W. 44th St., New York, produces the most delicate pictures of any one we know. Recently he placed in our hands a well-brightened silver dollar. Then taking it he lifted out the obverse side, and underneath was a lovely portrait with one facing it inside. A neat and pretty work.

How to Make Photographs.—A new edition of this work has been issued by the Scovill Manufacturing Co.

Obituary.—S. Fisher Corlies, one of the first, one of the brightest and best beloved of the members of the Photographic Society of Philadelphia, died suddenly on June 13th. He was buried on the 17th inst. and on the evening of the 20th the Society held a special commemoration meeting. The proceedings will be reported in our next number. We knew Mr. Corlies before the advent of our magazine. He was the representative of an old and distinguished Philadelphia family. He was an active member and officer of the Zoological, of the Photographic Society (Treasurer), and of many other organizations. A man of charming manners and winning qualities, he was extremely popular with his large circle of friends and acquaintances. His death will be deeply lamented.

A Grand Result.—At the late commencement of the Stevens Institute of Technology, Hoboken, N. J., of which Dr. Henry Morton is President, thirty-nine engineers were graduated. The exercises were most interesting.

The Honorary Degree of Doctor of Engineering was conferred upon Prof. Coleman Sellers, and the degree of Ph.D. upon Brown Ayers, Wilbur B. Brown, and Durant Woodman, graduates of Stevens. Rev. Mr. Dod, President of the Board of Trustees, then paid a deserved tribute to President Morton, to whose generosity the college owed the recent endowment of $10,000 for the Chair of Engineering Practice. He said that it was the fourth time that the President had shown his great interest in the college by special deeds of generosity and mentioned the Chair of Applied Electricity, the Mechanical Laboratory, the Morton Scholarship, but that greater than all these he had given himself to the Institute. "The Institute is what it is, because Henry Morton is its President. I will not say 'may his shadow never grow less,' but 'may his light ever grow more.'" These remarks were interrupted and followed by prolonged applause.

Another Work by Mr. Burbank.—*The Photographic Negative.* Written as a practical guide to the preparation of sensitive surfaces by the collotype, albumen, collodion, and gelatine processes, on glass and paper, with supplementary chapters on development, etc. By the Rev. W. H. Burbank, author of *Photographic Printing Methods, etc.*

This new work is a companion to the author's *Printing Methods* and of about the same size and style. The price, however, has been advanced to $1.50. The book could scarcely more entirely fulfil the promise of its title page, than this one does. With love for the work, with discerning mind, and with expert practice as compiler, the reverend and enthusiastic author has prepared a most enjoyable and instructive book.

He seems to have canvassed thoroughly all the authorities on the subject, and gives an honest list of them in the front. He seems to have omitted nothing in negative-making from the collotype to the tiniest micro-photo negative.

Chapters I. and II. are devoted to remarks "On sensitive surfaces" and "On exposure, development, fixing, etc.," and Chapters XXI. and XXII. "On the transformation of negatives into positives," and "On the direct production of negatives from negatives," give a fine beginning and ending to the book, and are among the most valuable parts of the whole. 191 pages with a classified index added complete the admirable work. Those who are collecting a library of specialties in photography will find it a most enjoyable and helpful volume, and we predict a generous sale for it. Scovill Manufacturing Co., Publishers, 423 Broome St., New York.

Sun and Shade.—A novel journalistic venture is made in *Sun and Shade*, the prospectus of

which our readers may have noted in our last issue. The new periodical is to be devoted entirely to that most important and growing branch of photographic work, the reproductive processes of engraving. More especially will it exhibit the capabilities of the finer, more delicate and artistic processes, with whose results the readers of the PHILADELPHIA PHOTOGRAPHER have, through its frontispieces, been for some time pleasantly acquainted.

Nevertheless many interested in photography, and much more the general public, do not yet know the possibilities of these wonderful processes, nor what work is being done with them in this country. For such there are revelations in the perfection and artistic qualities of these reproductions, presenting prints made direct from the negative from life or nature, absolutely without intervention by artist or engraver, that are the summit of reproductive excellence. With equal fidelity we find plates from drawings or paintings made, with not only tone and values faithful, but every item of the handling preserved almost to the last brush-stroke or pencillines. Other processes translate: these reproduce and preserve the spirit as well as the body of their subject. To art and life as presented by the "direct" processes proper, the new journal will be devoted.

And through these the whole field of art, photographic and pictorial, will be laid under contribution. It is desired to have progressive photography, in all its departments, well represented. Everything accomplished by the camera comes within the province of this photographic record of events.

On this side is it that the readers of the PHILADELPHIA PHOTOGRAPHER are touched, more especially the amateur. The professional photographer, we hope, will favor the new comer with such of his portrait work as possesses unusual artistic qualities, or a notable subject: but the amateur, from the nature of the case, has a wider range. He is everywhere with his camera. With the detective box, fast plate, rapid shutter, and magnesium flash, caution cannot avoid him, darkness cannot cover, nor speed escape. And in their less sensational hours the amateurs produce landscape and figure studies which need give way to none either in technical or artistic excellence.

There is offered a new outlet for their energies. They should not be unworthy to have their works appear "in print." The new journal wishes to show everything that photography guided by taste can do. As a devotee, then, of the camera it becomes a duty for the amateur to aid in spreading a knowledge of its possible accomplishments. Let him respond freely and generously.

The use of negatives is invited from all sources, and everybody who loves pictures and profits by their study will subscribe for *Sun and Shade*. It should be on the reception-room table of every photographic studio.

We would call attention to further announcements elsewhere.

ANOTHER CLAIM FOR HYDROXYLAMINE.—We take pleasure in the following letter to us:

DEAR SIR: I wish to record the fact that I find in hydroxylamine a valuable developer for collodion wet plates, especially for process work. I have not, as yet, fixed on the best formula for this work, but as soon as I have made a few more experiments in the best proportions of the developer I will send you the results.

Yours truly,

JEX BARDWELL.

DETROIT, June 15, 1888.

THE July number of *Babyland* is here, and the little folks think they could better spare the "glorious Fourth" than the visits of their cherished *Babyland*. The best thing published for the babies from one to six years old. Send five cents for a sample copy to D. Lothrop Company, Boston.

MORE LIGHT.—In addition to the flash-light pistol described on page 375 of our last issue, the Hawkridge Manufacturing Co. also supplies a hand-lamp arrangement called "The Pocket Magnesium Light." It holds 130 feet of magnesium tape which will burn two and a half hours at an expense of $1.25. It is supplied with a reflector at $7.00 filled, and is a capital thing for bromide enlargement work. It can be lighted or extinguished instantly, and, as it is held in the hand the light may be applied anywhere and at any time.

THE Non-explosive Illuminating Powder employed for the Hawkridge pistol is supplied in ounce bottles—250 flashes each—at the remarkably low price of $5.00 per dozen bottles. It seems incredible. "And non-explosive, too?" Well, one of the pistols was melted all apart at Mr. Falk's late fire, and yet the powder contents did not explode, or even take fire. All "flash" photographers will examine and read the new illustrated advertisement.

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.

AIR BRUSH MFG. CO. PRIZES.

The Air Brush Mfg. Co. will offer the following prizes at the Convention of the Photographers' Association of America, to be held in Minneapolis, in July, 1888:

One complete Air Brush will be given for the best portrait in black and white, finished with the Air Brush.

One complete Air Brush will be given for the best portrait in water colors, finished with the Air Brush.

All work competing for these prizes shall be over prints.

The awards shall be made during the Convention by three judges who shall be members of the P. A. of A., and who shall be chosen at the time of the Convention.

$300 will buy my branch gallery. No opposition. Established trade. Poor health the reason for selling. W. H. Dunwick,
Pulaski, N. Y.

For Sale.—Photograph gallery in a large city, doing a good business; rare chance for a good man; write for particulars and price.
Address, Burrell,
357 Westminster St., Providence, R. I.

Ho! for the Convention at Minneapolis, and you will feel repaid. One look at the specimens shown on Anthony's Reliable Bromide Paper will make you hungry for more.



VIEWS
reproduced in this popular form, at lowest prices, from prints or negatives.
A. Wittemann,
60 Reade St., N. Y.

The most complete order book for a photo gallery is the "Studio Register." It is for sale by all wide-awake dealers. A sample page can be had without expense by applying to Smith & Pattison, 261 and 263 State St., Chicago.

1878. 1888.

SAMUEL G. NIXON,
Artist,
154 North Ninth St., Philadelphia, Pa.

Photographic enlargements furnished and finished in Crayon, Ink, or Water Colors.

Send for 1888 reduced Crayon price list. Highly finished work at low prices. Will alter pictures after delivery, if returned.

Do not visit the Convention and leave without seeing the Champion Light Weight Camera of the world, the "*Phantom.*"

A photograph is liable to stop in the burnisher if the tool is stationary, no matter whether it is hollow or solid. It can't stop in the Quadruplex Enameler, because the polishing roller travels faster than the picture and helps it through. The Quadruplex is the King of Burnishers.

O. H. PECK,
Importer and Wholesale Dealer in
Photographic Supplies,
217 and 219 Second Ave. S, Minneapolis, Minn.

"After a lively skirmish we have won the fight," and the next Convention of the Photographers' Association of America will be at the Exposition Building in this city July 10th to 14th, inclusive.

Now we want to show our Eastern neighbors that there are some photographers in the untamed Northwest, so from this time on, "Whoop 'er up boys," and bring a good display with you.

We will have a large exhibit at the Convention, and a full stock of Wilson's Photographic Books.

Try Richardson's Grace Lubricator.

For Sale.—As they are, six direct solar cameras, 14 inch condensers; will print up to 25 x 30. Lately in use at Albert Moore's. Also a library of photographic books. Cheap for cash. Address,
W. L. Shoemaker, Phœnixville, Pa.

EDWARD L. WILSON, the well-known and popular Photo-Book Publisher, of No. 853 Broadway, New York, has just issued a very valuable and important work on Photo-engraving, Photo-etching, and Photo-lithography. The publisher and author claims the book treats "mainly upon an entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them." It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Mr. Wilson's own contributions and translations from the French and German, make the new book very thorough and practical, and also make the whole of the processes very plain. The book is 6¼ x 8¼ inches, illustrated, 180 pages, and cloth bound; price $3, post paid, and is divided into the following departments;

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed.

Since the demand for photo-engravings from newspapers, magazines, etc., is each day growing greater and more imperative, it behooves those who desire to become skilled in this fascinating process to secure a copy of the new work.—*Lithographer and Printer.*

Roll on to Minneapolis and examine Anthony's Roll Holder, the best and cheapest.

DON'T you believe it, if a dealer tells you that a 2-Cog Burnisher is "just as good" as a "Quadruplex Enameler"—SMITH & PATTISON, 261 and 263 State St., Chicago, can show you "too quick" that it is not so—the Quadruplex is King.

NEW SULPHITE OF SODA (Crystallized).—Price: In 5 pound cans, $1.00, 1 pound cans, 35 cents, ½ pound cans, 25 cents. For sale, wholesale and retail, by

GEORGE MURPHY,
No. 2 Bond Street, New York.

1886.—February 6th wanted. Copies of the PHILADELPHIA PHOTOGRAPHER for Feb. 6, 1886 wanted. A copy of 1888 *Mosaics* will be given for each such number sent to this office. EDWARD L. WILSON.

ADT'S PATENT PRINTING FRAME.—The printing frame of the future. Considering the construction of the Back-board, the Patent Tally, and the Elastic Felt Pad, the Adt Patent Printing Frame is the cheapest and best in the market,

PRICES.

3¼ x 4¼	$0.50	6½ x 8½	$0.75
4 x 5	50	8 x 10	85
4¼ x 5½	50	10 x 12	1.15
4¼ x 6½	60	11 x 14	2.15
5 x 7	65	13 x 16	2.40
5 x 8	65	14 x 17	2.80

When made with backs to open longthways, an additional charge of ten per cent. will be added to the foregoing prices.

Now in stock.

GEORGE MURPHY,
2 Bond St., New York.

Try Richardson's Grace Lubricator.

VIOLET LIGHTNING FLASH.—(Brutum Fulmen.) This compound is made by a new formula, and produces the most powerful actinic light yet discovered. It contains neither acid, chlorate of potash, nor animal charcoal. It oxygenizes more rapidly than any flash compound heretofore offered, and may be used on card-board or glass with safety.

Twenty grains is quantum sufficit for an ordinary flash (instead of forty to sixty grains, as stated on our copyrighted directions). According to subject, distance, quality of lens and rapidity of plates used, vary the above quantity. A twenty-grain measuring-cup is sent with every bottle. Handle with care.

BUCHANAN, BROMLEY & Co.,
Manufacturers,
Philadelphia, Pa.

FOR SALE.—One photograph wagon, which was formerly used as a dark-room. Has enclosed steps in back.

PACH BROS., 841 Broadway, N. Y.

The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckyian would say, good whisky. Send the book on Photo-Engraving.

FRANK THOMAS,
Columbia, Mo.

FOR SALE.

1 Imperial photo press, R. Hoe make, in good order	$25 00
1 7 x 10 Press, good order	10 00
1 12 x 15 Rubber Bath Holder, air-tight top	3 00
1 15 x 19 Rubber Bath Holder, air-tight top	4 00
1 15 x 19 Glass Bath Holder	6 00
1 16 x 20 Glass Bath Holder	6 00
1 Silvering Room Gas Stove	5 00
1 20 x 25 Bath Holder	15 00
1 Wall and Gate Posts	7 00
1 Circular Rustic Tree Seat	4 00
8 x 10 Printing Frames, each	25
11 x 14 Printing Frames, each	35
14 x 17 Printing Frames, each	50
1 New 11 x 14 Optical Co.'s View Box revolving back, Barnett holder	50 00
1 4 x 5 View lens	3 00
5 x 8 Old Negatives, not retouched, each	1
8 x 10 Old Negatives, not retouched, each	2
1 14 x 17 View Camera, with Plate Holder	8 00
1 20 x 24 View Camera, with Plate Holder	12 00

PACH BROS.,
841 Broadway, N. Y.

Go West, and fear not blizzards, but find the Zephyr Holder; lightest, strongest, and best.

THE KING OF BURNISHERS.—The Quadruplex Enameler is gaining ground every day, they are being ordered from all parts of the world. Conservative photographers who bought small ones to try, are now ordering large ones. You make a great mistake if you buy a burnisher without thoroughly investigating the merits of the Quadruplex, manufactured by SMITH & PATTISON, 261 and 263 State St., Chicago.

CARBUTT'S ECLIPSE PLATES.

BALTIMORE, April 9, 1888.

MR. CARBUTT:

The Eclipse Plates came to hand all right, and I find, as with all rapid plates, they require more care. I think they are the quickest plates I ever worked. ————'s 40 not excepted. Please send following, 2 dozen 14 x 17; 2 dozen 11 x 14; 1 dozen 10 x 12; all "Eclipse."

Yours truly,
GEO. E. MUELLER.

A SECOND EDITION

JUST RECEIVED FROM ENGLAND,

PROF. W. K. BURTON'S NEW BOOK,

Practical Guide to Photographic and Photo-mechanical Printing Processes.

Price, $1.00.

MARION & Co., Publishers, London.

The well-known author says, "The object of this work is to give practical instructions in the working of all processes which are in actual everyday use at this date."

The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

Copies mailed on receipt of price.

EDWARD L. WILSON,
853 Broadway, New York.

FOR SALE.—To some man that wants to come west. I have one of the best galleries in the west, and one that pays; but I must sell on account of my health. If you are looking for a bargain, write me.

H. G. CALE,
Lock Box 14, Minneapolis, Kansas.

Steal towards the setting sun and see Anthony's goods at Minneapolis. Everything of the latest, best and most approved styles.

See what wide-awake photographers are doing with the Violet Lightning Flash Compound:

WONDERFUL.—If you are too busy to sit for your picture during the day, go to the gallery in the evening, and have your picture made by the Flash Light. I guarantee satisfaction on Flash Light Pictures, or money refunded. Have your pictures made in the new boat.

W. H. REYNOLDS, *Photographer.*

"I am having great success with the Compound, and can make as good a picture by night as in the day time." W. H. R.

BUCHANAN, BROMLEY & Co., "Flash" makers, 1030 Arch Street, Phila.

STAMP PORTRAITS!

THE ONLY AND ORIGINAL.

Perforated and Gummed like postage stamps, and the only Stamp Portraits covered by Letters Patent. Issued July 12, 1887.

Having purchased from Kuhn Bros., the Letters Patent covering the manufacture of *Stamp Portraits*, also on the *Apparatus for making the same*, we hereby notifiy and caution all infringers that legal action will be taken to protect said letters patent.

Send for trade price list.

No less than one hundred made from one subject; for larger orders special prices will be made.



MINETTE STAMP PHOTOS.

Taken from any Cabinet, or Card, or Small Photograph.

Made in sheets, perforated and gummed, four times larger than the "Stamp Photo." No less than two dozen from one subject made.

Address all orders to

H. A. HYATT,
N. E. Cor. Eighth and Locust Sts.,
St. Louis, Mo.

Territorial Rights and Complete Outfits for sale.

Economy is wealth. See how far a small sum of money will go in buying Anthony's Specialties in Minneapolis.

JUST OUT.—The Stoddard Print Roller, the best in the market. Price, $1.00.

GEORGE MURPHY,
No. 2 Bond St., New York City.

PROFESSOR W. K. BURTON'S BOOK ON PHOTO-MECHANICAL PRINTING PROCESSES continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated, and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.—*Anthony's Bulletin.*

WANTED.—The *live* photographer everywhere, to issue special-rate photo. checks in combination with our *glass tablet photo mounts.* Is new; takes at once.

We mount cabinet size prints for photographers for $1.00 each, transportation paid by us. E. K. TALCOTT, 216 Northampton Street, Boston, Mass.

THE PLATINOTYPE for Photographers, Solar Printers, and all Copyists. Platinotypes are permanent, and a license to work the process costs very little. Send ten cents for sample portrait and book of instructions.

WILLIS & CLEMENTS,
1112 Hunter St., Philadelphia, Pa.

Brass and glass are cheap, *but* when fashioned by Dallmeyer, are worth gold and diamonds. See pictures at Minneapolis made by his lenses. Every first-class photographer uses them.

I HAVE received your Burnett and prize it very highly, as it is a great assistant in the studio. I consider it invaluable to any Photographer or Artist.

F. W. GUERIN, St. Louis, Mo.

IT is a pleasure to know that all of the best photographers in the city of PHILADELPHIA are using Three Kings Albumen Paper. Price per dozen, 90 cents; per ream, $32.00; second choice, per ream, $24.00.

BUCHANAN, BROMLEY & Co., Importers,
Philadelphia.

Photo-Engraving, Photo-Etching, and Photo-Lithography.
Just ready. Price $3, post-paid.
See advertisement.

TALCOTT'S PATENT GLASS MOUNTS.

NASHUA, N. H., March 13, 1888.

E. K. TALCOTT, ESQ.

DEAR SIR: I desire to express my unqualified satisfaction with your very superior Patent Glass Mount. It almost invariably calls forth loud praises for its beauty, brilliancy, and novelty, from all whom I supply, and its undoubted durability makes it a valuable acquisition.

Yours respectfully,
A. C. AUSTIN.

BUY BURNET.

— EUREKA! —

(Bargain List.)

1 25 inch Entrekin Burnisher	$45.00
3 Bergner Stereo Cutters, each	15.00
1 Darlot ½ size Portrait Lens, Rack, and Pinion Central Stops	14.00
1 ¼ size Lantern Objective, no name, good condition	5.00
1 No. 2 Euryscope Lens	40.00
1 Pair (matched) No. 0 Euryscope Stereo Lenses	40.00
1 18 x 24 Common-sense Tray, good as new	3.75
1 Marion Hard Rubber Adaptable Drop Shutter, cost $10.00	5.00
1 No. 2 Darlot Rapid Hemispherical	20.00
1 E. A. Single Combination Lens, Rack and Pinion Movement	5.50
1 Ross ½ size Portrait Lens, Rack and Pinion, Central Stops	30.00

The above bargains are offered for sale for cash and are all guaranteed to be in good working condition or no sale. Roberts & Fellows, 1125 Chestnut St., Philadelphia, Pa.

Good-bye to cheap, flimsy goods. See Anthony's Climax Cameras at Minneapolis.

The Platinotype for Amateurs; simple to work, and the results artistic and beautiful. Send ten cents for sample landscape and book of instructions. Willis & Clements,
1112 Hunter St., Philadelphia.

To Ferrotypers.—The Eagle Ferrotype Collodion. Use it for fine effects.
George Murphy,
2 Bond St., New York City.

The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckying would say, good whisky. Send the book on Photo-Engraving.
FRANK THOMAS,
Columbia, Mo.

For Sale.—Several sets of apparatus and lenses suitable for amateurs.
Address "E."
Office of Philadelphia Photographer.

ART OF MAKING PORTRAITS IN CRAYON ON SOLAR ENLARGEMENTS.

By E. Long.

Second Edition.—Now Ready.

The *Photo Times* says: "The second edition, rewritten and enlarged, of this popular handbook for crayon artists, has recently been issued. The first edition of this book being small and published rather as an experiment, many important points on the subject had to be treated briefly. But that edition meeting with such a warm reception and selling so rapidly, the author resolved to enlarge the second edition and give his readers the benefit of the knowledge which he had since gained of new materials and a fuller description of his methods of handling them. **The little work treats solely of bust and vignette portraits, and its aim is to assist young artists who are struggling alone beyond the reach of competent teachers.** After an introductory confidential chat with the students, we have chapters on the Solar Print, Crayon Materials and How to Prepare them; the Crayon Print, Interlining and Retouching; Hair and Beard; Drapery; Background; and Concluding Remarks." It is the best.

Price, in paper cover, fifty cents.

For sale by Edward L. Wilson,
853 Broadway, New York.

The Novelette Cameras at Minneapolis. Best for the money. Examine carefully. They will bear inspection.

Wilson's Quarter Century in Photography.—From the title of this book a casual reader would suppose that it was the experiences of a photographer for a quarter of a century; but they would be greatly mistaken, as its second title, "A Collection of Hints on Practical Photography, which forms a Complete Text-Book of the Art," explains what it really is. Mr. Edward L. Wilson, the author and compiler, is well known as a thoroughly practical writer on photography, and his *Quarter of a Century* is a valuable addition to the many other books on the subject he has written and edited. It will be an authoritative encyclopædia for many years to come; we have searched for omissions, but find it a very perfect treatise on the art.—*Trübner's American, European and Oriental Literary Record* (*London, Eng.*).

BUY BURNET.

PHOTOGRAPHIC MASKS.

The Rockwood Triplex Portrait Mask. One Dozen mailed on receipt of 50 cents. Also, manufacturer of all kinds of picture mats.

H. STENGEL,
710 Broadway, N. Y.

Every member of the P. A. of A. uses N. P. A. Albumen Paper, *because* it is the *best.* See proof at Minneapolis.

To PHOTOGRAPHIC MERCHANTS.

NEW YORK, September 1, 1887.

GENTLEMEN: We have now opened a *New York Depot* for the benefit of our Eastern patrons. From this depot orders will be delivered to any New York Freight, Express, or Steamboat office. Address M. A. SEED DRY PLATE Co., No. 2 Bond St., New York. A. R. HUISKAMP, Manager.

IMPERIAL Negative Reducer, for either dry or wet plates. Manufactured only by GEORGE MURPHY, Sole Proprietor, No. 2 Bond Street, New York. Price per pint bottle, 80 cents.

The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckyian would say, good whisky. Send the book on Photo-Engraving.

FRANK THOMAS,
Columbia, Mo.

HANCE'S Ground Glass Substitute makes a splendid backing for window transparencies and glass stereographs. It softens the light wherever used.

Try Richardson's Grace Lubricator.



SEED'S PATENT VIGNETTERS.

CHICAGO, May 25, 1888.

Messrs. M. A. SEED Co.

GENTS: The Seed Vignetters you sent me, I am very much pleased with. They make a perfect vignette, are very easily adjusted, and being perfectly transparent in the centre, allow the negative to print as rapid as a full figure with a plain background. They are a necessity for every printing room, and must soon come into general use.

Yours truly,
ALEX. J. W. COPELIN.

ST. LOUIS, May 15, 1888.

Messrs M. A. SEED Co.

GENTS: I have tried your Vignetters and consider them the best I have ever used, as they do away with all tissue-paper; and vignettes can now be made as fast as plain prints. I shall use no other.

PIPER, with F. W. Guerin.

To be had from all dealers.

M. A. SEED DRY PLATE Co.,
1202 Washington Ave.,
St. Louis, Mo.

SITUATIONS WANTED.

As operator or retoucher; have had over twenty years experience and can furnish the best of references. Would rent or take charge on shares. A. D. D., 1212 Va. Ave., S. W., Washington, D. C.

By a first-class operator desirous of making a change. Correspondence desired with strictly reliable houses only. "Photographer," 803 Preston St., West Philadelphia, Penna.

To work for board while learning photography, by a man who knows something about dry plate work. C. Lowater, Rock Elm, Wis.

By an A No. 1 retoucher and very fair operator, permanent engagement in a first-class city gallery. Best of references furnished. "Retoucher," 13 E. North St., Canton, Ohio.

By a first-class photographer in any branch, at a watering place. Will send samples. C. Miller, Washington City P. O., D. C.

By a striotly first-class retoucher, and good operator, a permanent position. Would rent a well-furnished gallery in a good town or city. Address, "Photographer," P. O. Box 16, Tama, Iowa.

By a first-class operator, retoucher, printer, and toner. Can take full charge or as operator. None but first-class galleries need apply. Willing to pay a good salary. Reference A No. 1. Address "Operator," 2640 Fairhill St., Philadelphia, Pa.

By a young man of two years experience in a first-class gallery as general assistant. Wishes an opportunity of finishing, printing and retouching. E. B. G., Box 208, Watsontown, Northumberland Co., Pa.

By a strictly first-class competent operator and retoucher of 25 years practical experience. Employment at once. Can also work up in either Crayon or India-ink, and speaks fluently several languages. Address, H. Bremer, 421½ W. 6th St., Kansas City, Mo.

By a strictly temperate young man, as printer and toner. Can assist in operating, do some retouching, and be generally useful. Wages moderate. F., care Elwell's Studio, Macomb, Ill.

As general assistant; seven years experience in a first-class gallery. Reference from present employer: Strictly temperate. Please state salary. No Sunday work. H. S. Fudge, Blossburg, Tioga Co, Penna.

MOSS ENGRAVING CO. 535 PEARL ST. NEW YORK.
COR. ELM ST.
ENGRAVINGS FOR BOOKS, NEWSPAPERS and CIRCULARS
SEND GREEN STAMP FOR CIRCULAR — SEND PHOTOGRAPH, DRAWING or PRINT FOR ESTIMATE

C. H. CODMAN & CO.
Photographic Stockdealers

Sole Agents for the NEW ORTHO-PANACTINIC LENS, Moor's Photographic Enamel, the Perfect Mounting Solution for mounting Photographs on the thinnest mount without wrinkling.

New England Agents for American Optical Co.'s Apparatus. The best in the world. Send for Price List.

34 Bromfield Street. BOSTON, MASS.



Portrait Colors The New Acme Water Colors for Photo-Portrait and Print Coloring

(any kind of paper) Transparencies, Glass Pictures, Fabric Painting, etc., are positively the best, because the most desirable, easiest to use, and the most for the money. Order at once the Large Palette Box, and get improvements just added, with guaranteed fast Flesh, Pink, etc. Put colored picture in the hot summer sun two or three months, and fade above colors out if you can.

LARGE PALETTE BOX, 18 Colors, with Instructions, . . . $2.50
SMALL OR AMATEUR BOX, 6 Colors, with Instructions, . . 1.00
Any Separate Color (over 20 shades) 25 cents.

Any live dealer can supply you, so don't be put off with a cheap substitute said to be "just as good." Send for new circulars.

T. M. STARR, Manager,
2710 Calumet Avenue, Chicago.

The Photo-Gravure Company
№ 853 Broadway New York

SOME OPINIONS OF THE PRESS.

NEW YORK EVENING POST.

"As a work of pure illustration it is unique.

"Unequalled by any similar collection produced on this side of the Atlantic. For the Photo-Gravures not even this qualification need be made.

"Several of these are gems of their kind, and will surprise even photographers who are not fully conversant with the recent advance in that branch of engraving, in which the Photo-Gravure Company stands unsurpassed now, when it is a question of dealing with negatives from nature."

PHILADELPHIA SUNDAY-SCHOOL TIMES.

"The pictures like those of *The Art Review*, are the work of the Photo-Gravure Company, which has here produced a distinctly American art work unexcelled in the present season."

NEW YORK MAIL AND EXPRESS.

"Reproduced by the Photo-Gravure Company in a most admirable manner. They are not to be described, however, for there is a charm about them, interfused in their soft lights and tender shadows, which evades words."

PHILADELPHIA TIMES.

"One of unusual beauty.

"The execution of nearly all of them is admirable."

THE NATION.

"Our publishers have hardly begun to realize the resources which this process offers for the decoration of books, with a very slight enhancement of the cost."

NEW YORK INDEPENDENT.

"These illustrations are reproduced in deliciously soft tones by the Photo-Gravure Company, of New York."

THE EVENING TRANSCRIPT, BOSTON.

"A volume of unusual beauty.

"Most of the illustrations are perfect gems."

THE PUBLIC LEDGER, PHILADELPHIA.

"The result is an art production by chemical and mechanical processes, that is in its way comparable to the best work of the engraver or etcher. It is something far beyond the ordinary work of the photographer, and may be considered the highest development of his art."

THE NEW YORK COMMERCIAL.

"Admirably reproduced by Photo-Gravure."

THE COMMERCIAL GAZETTE.

"Here again, the advance of the American engraver's art is strikingly apparent."

THE LITERARY WORLD.

"We wish always to be sparing in the use of superlatives, and guarded in the use of strong language, and to preserve carefully what reputation we have for a conservative and temperate judgment; but restraint is hard to bear in speaking out our minds about the work which, at the present writing, lies open on the editorial table.

"The Photo-Gravures introduced here and there by way of border decorations are exquisite, and the occasional vignettes dropped upon the corner of a larger plate introduce a charming irregularity and variety."

THE SUSQUEHANNA EVENING TRANSCRIPT.

"The illustrations are the finest we ever saw in a newspaper supplement."

PHOTO-LITHOGRAPHIC AND PHOTO-MECHANICAL PRINTING OF EVERY DESCRIPTION.

Catalogues of our Publications on application. Estimates of work cheerfully furnished and correspondence solicited.

Portfolio of specimens, worth $10, containing examples of all our processes, forwarded on receipt of price, $1.00.

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OF

THE INTERNATIONAL ANNUAL



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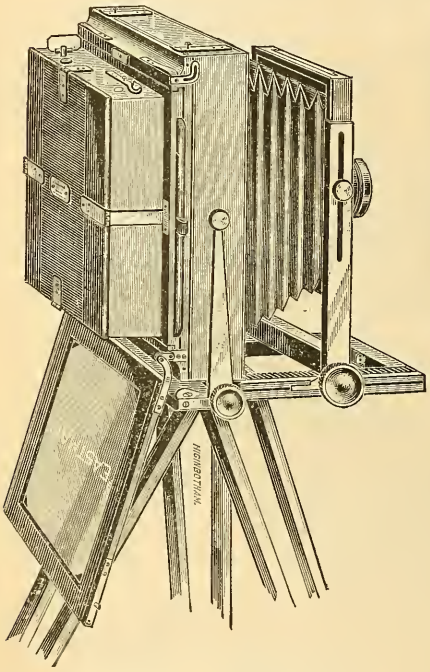
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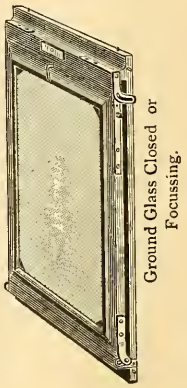
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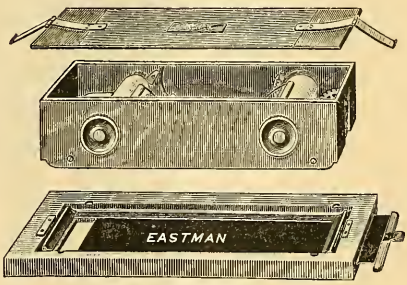
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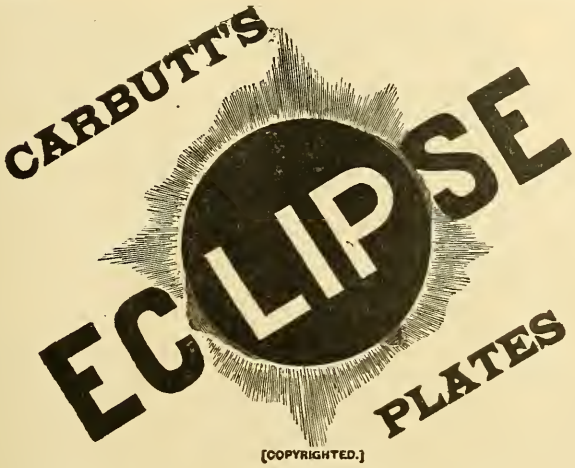
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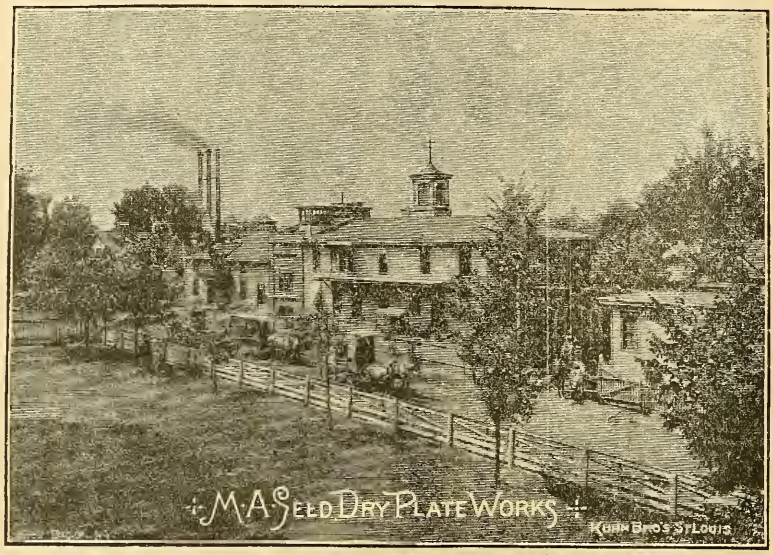
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The publication of these reproductions will be hailed with great pleasure by all students of art, and particularly by artistic photographers. As many know, the original work was published in three parts, as follows: 1. Practical Hints on Composition in Painting, illustrated by examples from the great masters of the Italian, Flemish, and Dutch Schools, published in 1822. 2. Practical Hints on Light and Shade in Painting, illustrated by examples from the Italian, Flemish, and Dutch Schools, published in 1826. 3. An Essay on the Education of the Eye, with reference to Painting, illustrated by copperplates and woodcuts, published in 1837. The original price was in the neighborhood of $14, and for a number of years the work has been scarce enough to command many times that amount.

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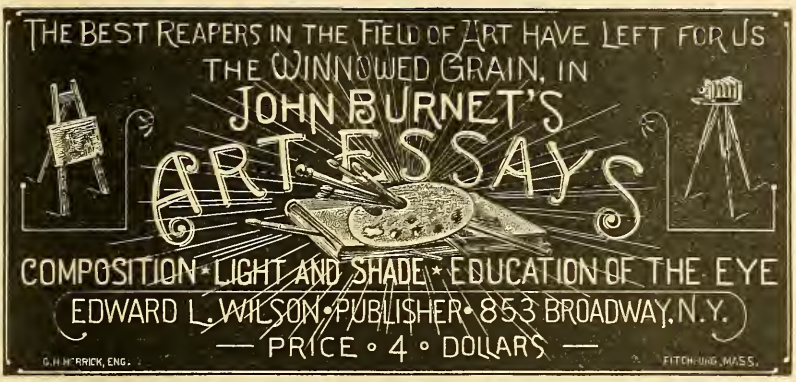
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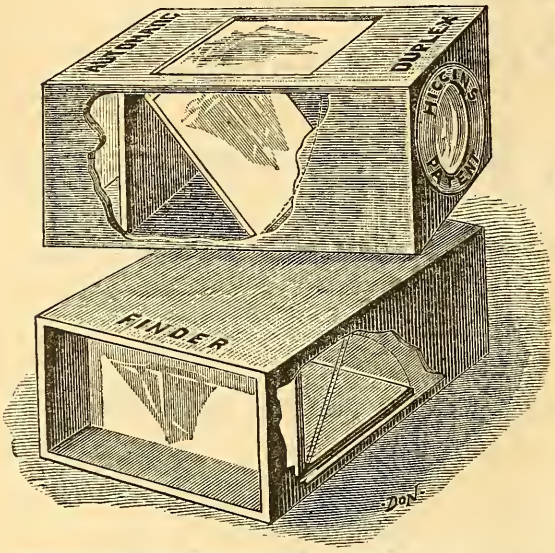
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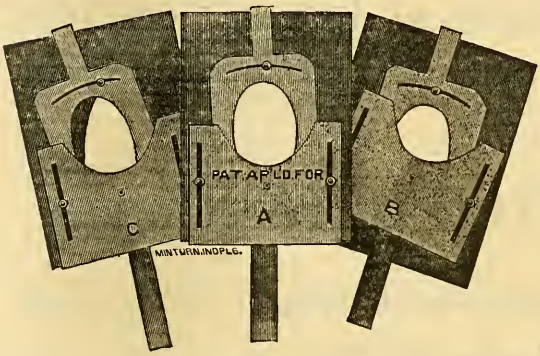
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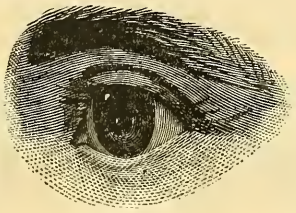
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Such questions as the above form a large part of my daily fare. They are the outgrowth of a quarter of a century of enjoyable service as a photographic journalist and photographic teacher. No one man, however, could carefully answer all these queries promptly and attend to his other duties too; therefore I was obliged to resort to the methods of other teachers who cater to the public wants, and *write a book that would help.* Almost every interested one has it. I allude to

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[OVER.]

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During the last half-dozen years which have seen the annihilation of uncountable dry plates, innumerable questions have suggested themselves as to the whys and wherefores of the many provoking failures we have made in photographics. Working spasmodically, as rare idle moments presented themselves, it is little wonder that perfect success was so seldom achieved, but just what it was that sometimes produced perfect negatives, was no less puzzling than what it was that so often produced perfect failures, and it was slowly borne in our mind that this fascinating art had its foundations in science, and that it would be quite useless to seek the answers to the riddles without first having, with some little thoroughness, refreshed one's memory as to the operation of the law of optics and the order of chemical reactions. By blindly following the instructions of the hand-books that are prepared for the use of amateurs, a reasonable measure of success rewards the operator, until there comes occasion for leaving the plain road and attempting to work to the desired end with no better guide than an awakened instinct. In such straits as these recourse is had to books, which teach the subject with all desirable thoroughness only to find that they are somewhat diffuse in treatment and voluminous in bulk for a busy man, who is not preparing for a professional career, to spend his time over. There was really a need for something between the slight hand-book and the all embracing treatise, and such a book has been prepared by the editor of the Philadelphia Photographer and the writer of several books on photographic methods. It is adapted to the needs of both amateur and professional, and would be a useful hand-book to have in any gallery, and it has one preëminent qualification for such service, it is nearly square in form, and, as a consequence, will open out flat and stay open, as books of the usual shape rarely will.

It is a very curious book in its make-up, a double-headed Briarcas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

A good index, fairly well cross-referenced, makes the book useful for quick occasional reference.—*Amer. Architect and Building News.*

A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better.—DEAN WRIGHT, in the April *Boston Academy*.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text book of the Art. By Edward L. Wilson. Published by the Author. New York, 1887. Price $4. Pp. 528.

In making the above claim that this work is a complete text book of the art of photography, the author has not overstepped the mark, for we have seen nothing to compare with it in clearness and attention to details and manipulations. The author's easy style is already well known to those interested in the subject, and goes a long distance toward making the "Quarter Century" an interesting volume, entirely independent of its large store of information. After an outline history of the subject, the theory of photography is treated of; then follow the subjects of light, the camera and lenses, the diaphragm, artistic principles, indoor and outdoor work, chemicals needed, negative making, printing, photo-engraving, slide making, etc., etc., with a host of details worked in under the proper headings. Isochromatic photography is treated of in a separate chapter, and its special value in certain classes of work noted. The more prominent features of the work are the chapters on lenses, art principles and the making of paper and film negatives. The treatment of this last subject will be found of especial service to the travelling amateur, who is often deterred from adopting the use of flexible negatives simply because he can find little reliable information concerning their peculiarities. We know of several cases of amateur enthusiasts in the art who have tried the "films," and finally returned to the old stand-by glass plates, because of difficulty in handling the later process. By the light of such information as Mr. Wilson has supplied, this difficulty largely disappears, and the process is simplified by giving a detailed understanding of it. The arrangement of the book is exceptional in one respect that greatly increases its value for general work. The main text is supplemented by foot notes in smaller type, comprising quotations from all our leading writers on the subject, and in many cases containing original methods that have not yet become generally known to photographers. This collection Mr. Wilson has been in an excellent position to make, as editor of the *Philadelphia Photographer*, and the readers of the "Quarter Century" will be more than repaid by a close comparison of the methods presented.—*Iron*.

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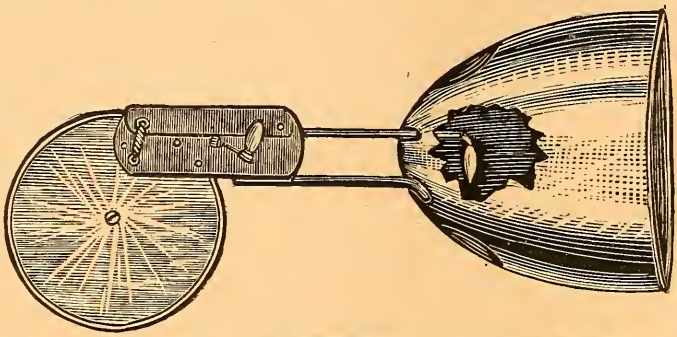
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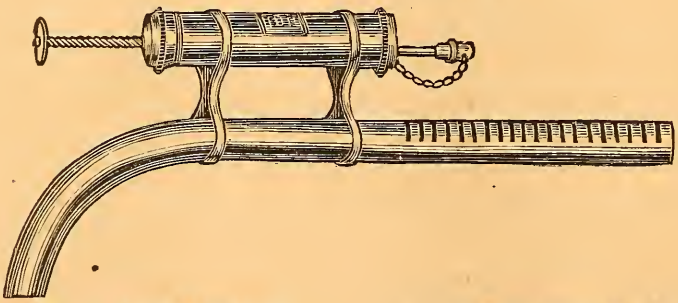
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The publication of these reproductions will be hailed with great pleasure by all students of art, and particularly by artistic photographers. As many know, the original work was published in three parts, as follows: 1. Practical Hints on Composition in Painting, illustrated by examples from the great masters of the Italian, Flemish, and Dutch Schools, published in 1822. 2. Practical Hints on Light and Shade in Painting, illustrated by examples from the Italian, Flemish, and Dutch Schools, published in 1826. 3. An Essay on the Education of the Eye, with reference to Painting, illustrated by copperplates and woodcuts, published in 1837. The original price was in the neighborhood of $14, and for a number of years the work has been scarce enough to command many times that amount.

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This book, too, ought to be a godsend to those butterflies of society who go to the Academy and other picture galleries, because it is the correct thing to do. They, as a rule, know nothing of art, but they talk about it as if they did, and Burnet would assist them to a few fresh ideas.—*The London Camera.*

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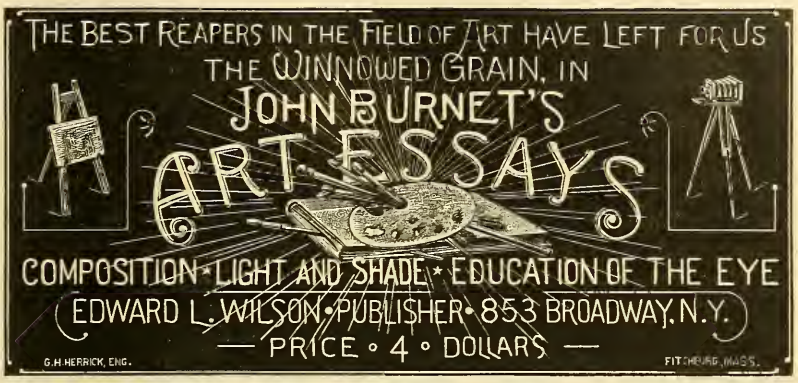
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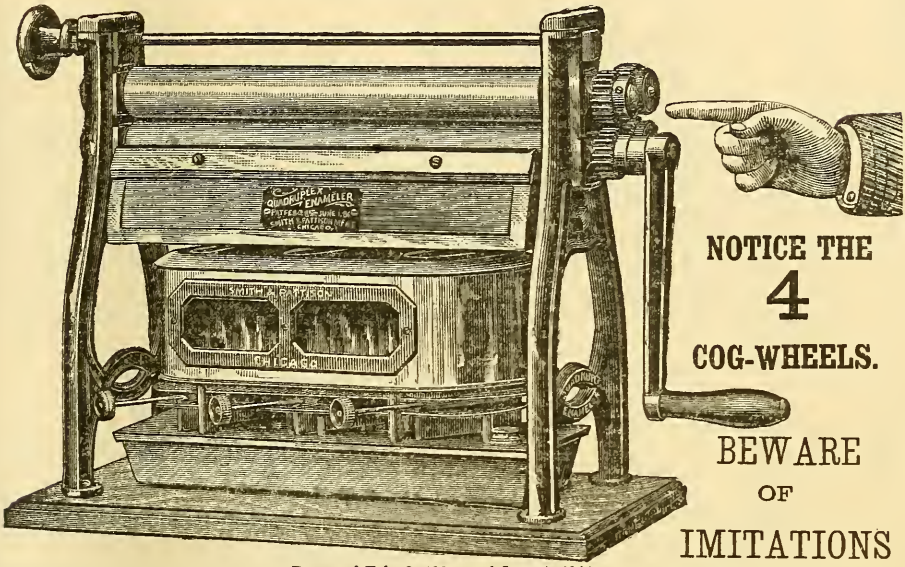
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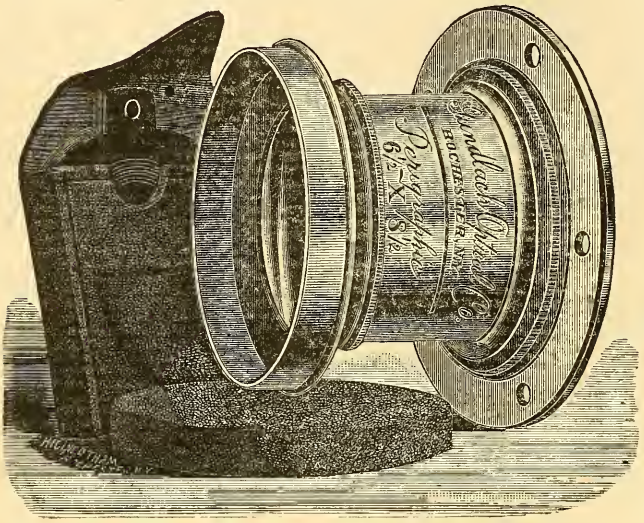
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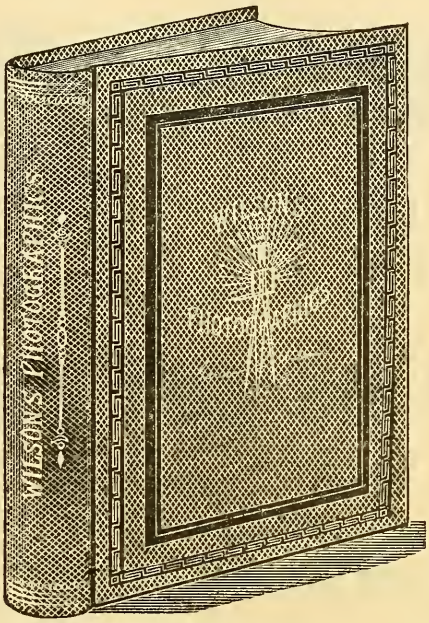
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PERTAINING TO THE



While our stay-at-home readers relieve the tedium of the hot July by the contemplation of the following pages—and this—we shall be preparing our report and review of the Minneapolis Convention and Exhibition. Doubtless all will share our wonder, that not a word appeared from the President of the P. A. of A., from its Secretary, or from its Executive Committee in our last, with reference to the Convention, not a single word of welcome. The reason is, that not a word had been heard from any of them by the Editor of this magazine for quite a month previous to the first of July. We consider it a mistake on their part, and some explanation must follow. It is usual for the officers to make their policy known beforehand, frequently.

As before announced, we have made a slight temporary change in our issues, to accommodate the report of the Convention. In our next number, August 5th, we hope to give as full a record as the circumstances afford.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 405.)

Film Work.

It is not my intention to say much about the paper negatives that only a few years ago came decidedly to the front as the great substitute for the heavy glass plate, but for various and serious reasons, such as the difficulty of rendering them transparent, the nastiness of the procedure, and the decided disinclination they have to remain even translucent, soon caused doubt, and then a decided let-alone policy amongst amateurs. We hear but very little of them now. We, therefore, will turn attention to the child, greater than its parent. I refer to the American film—stripping film—and especially those prepared by the Eastman Company, a superior article to any that I have seen from other lands. The film consists of a film of insoluble sensitive gelatine emulsion, attached to a paper support by means of a layer of soluble gelatine. This paper forms a temporary support to the film during the operations of exposure, developing, fixing, and washing; after that the film is laid down, film side on a prepared sheet of glass. The glass should be carefully cleaned and dusted with talc or French chalk, this gently wiped off, and then flowed over with a rubber solution. When dry, should you wish a finely polished surface, an additional coat of collodion should be poured over the rubber. The rubber is used to enable one to easily

remove the film from the glass. The film, after being developed, is then squeegeed and fixed against the glass to remove the surplus water and any air bubbles lodging there, and placed under pressure until dried. When dry, soak the film and plate in a dish of warm water, increasing the temperature until the paper commences to blister; now you lift one corner of the paper with the point of a pin, and gently pull it off from the negative film, which will, or should, adhere to the glass. Remove from the film all traces of the soluble gelatine which lies between the paper and the film, by the aid of warm water and your fingers. The image-bearing film is now upon the glass with the paper removed, and should it require intensification or reduction it should be done now. The inventors recommend for intensification to pour over the film a saturated solution of bichloride of mercury (corrosive sublimate) until it assumes a dull gray color, when it should be thoroughly washed and immersed in a bath composed of aqua ammonia 10 drops, water 1 ounce; wash well, and then apply the gelatine skin, which is done by immersing the glass plate in a dish of water, film side up, then passing under the water the gelatine skin, rough side up, and grasping the plate and the skin with the two thumbs and first fingers of each hand, seeing that the skin is properly centered on the film; raise the plate and skin from the water, letting it drain, and then, with the rubber squeegee, press the skin down upon the film, and drive out all the surplus water and any air bubbles that may be lodged under the skin. Now lay the plate down, and apply more pressure by the squeegee, and then put it in a rack to dry. When dried, with a sharp knife cut around the edges of the skin, and the film and skin will, by gentle traction readily come off the plate. The surface next the glass should be swabbed with a bunch of cotton dipped in benzine, to remove any trace of the rubber from the face of the film. You now have a thin negative that can be printed from either side. The exposure of these films is made either by a specially prepared slide called the roll-holder, an ingenious, rather cumbersome, and somewhat expensive piece of mechanism, holding paper for twenty-four or more exposures; or, by specially prepared carriers, which consist of a flat tablet, constructed, to prevent warping, of a number of strips of wood, which fits into a thin metal frame with bent edges, which act as a spring or clip, and securely clasps the wood plate when pressed upon it. The paper, cut to the required size, is laid down upon the board, face out, and the frame pressed down upon the board. Great care must be exercised to have the paper lay perfectly flat, otherwise it will bulge out in the middle, and produce a distorted picture. The carrier is intended to occupy the place of the glass plate in the ordinary holder or dark slide. There is no doubt but that paper presents many advantages over glass. It is unbreakable, lighter, and more compact, and some claim that these negatives are more easily retouched than glass ones. Still, though these films have been much improved during the past year, there is still much, very much, more to be accomplished before they can entirely supersede, if they ever do, the glass plates. The manipulations are more complex, tedious, and longer than those required by the dry plate, and the ease with which twenty-four or more exposures can be made, *must* tend to a mechanical rather than an artistic search of subjects, of which there is too much already. It is claimed that many exposures can be developed at the same time. Granted, if the time of exposure was the same, lighting of the subject the same, and all the various surroundings of like nature. But is this apt to be the case when twenty-four exposures are made during one outing? I think not, or rather I know it cannot be. It is claimed that the danger of halation is rendered *nil* by the paper support. In my hands this claim has not been fulfilled. If the paper support should be colored a dead black, or even a ruby, I think that halation might be entirely done away with. These films are said to be very rapid: a delusion and; oftentimes, a snare. No sensitometer number being given, one is apt to be misled, until by frequent failures the proportion of exposure is discovered—under-exposure being generally the rule. In developing, a novice in film work is apt to push his development too far, and in fixing to remove the film too soon from the hypo bath. When paper can be discarded as a

adorned with coronets), requesting me to send them copies when finished. Some of them were reckless enough to offer payment in advance, which I fortunately declined; for strolling to the same place in the afternoon, I found the lighting of the subject so much better that I resolved to make another exposure, selecting another standpoint. The ground was clear, there being no other persons present than my own party. But to my dismay I discovered that I had made the second exposure on the same plate which I had used in the morning. Nevertheless, the plate was developed, and showed a rather over-exposed picture of No. 2, while No. 1, including all the crowd, was gone, and only traces of the highest lights of the first exposure were visible.

The lesson to be learned from this experience is, that any second exposure on the same plate will lessen the force of the first, and any third exposure will lessen both, and so forth. It would be well to take this fact into consideration when attempting the "composite photographs" now in vogue.

In order to arrive at a satisfactory result the most characteristic, strongest-featured face ought to be taken first, and the others in declining succession. If the faces to be combined should be of a similar texture, as in the the case of a number of young ladies, then the exposure should be duly proportioned; that of the first receiving the longest time. Thus, in a case of portraying five sisters, supposing the correct exposure of a single face on a slow plate should be two seconds, divide the time as follows: Give the first face 3, the second $2\frac{1}{2}$, the third 2, the fourth $1\frac{1}{2}$, and the fifth 1 second.

Composite pictures are of value only when restricted to one family, to one nationality, to one tribe. When extended to a heterogeneous class of forty or more individuals, the results, as shown in some of our monthlies, will tend to illustrate, not the average intelligence, but the average imbecility of the class, be it of professors or pupils.

THE OPEN CORNER.

Etching upon Boxwood Blocks. — Photographic etching upon boxwood blocks, such as are used in wood-engraving, has been deemed a practical impossibility. We learn, however, that it has recently been accomplished in Russia, and by a method simple and ingenious. The block in its natural condition is, of course, unsuitable. The first step is to fill its pores with insoluble carbonate of copper, by means of two separate solutions, in which it is boiled sufficiently. A polish is then imparted to its surface, asphalt in solution applied to its back and sides, and finally a sensitized gelatine film placed over the polished face. The subject to be etched is now photographed on the surface, and, by washing, the soluble and unprinted parts of the gelatine removed. A coating of asphalt is next applied to the raised parts, the block steeped in nitric acid of suitable strength (the stronger the better), where it remains one hour, when it is removed and subjected to the action of sulphuric acid for the same time. The portions unprotected are thus changed to nitrocellulose, which by brushing is readily removed in the form of a greenish powder. To complete the process, the block is dried, and briskly brushed with a stiff brush. The asphalt is lastly removed with benzine, and the block is ready for press. The practical value, as to depth and retention of details, we cannot state. It is an innovation, however, that may prove worthy of attention.—*Paper and Press.*

A Paper of Mr. Bedford on Isochromatic Photography. — At the London Photographic Society Mr. Bedford read a paper on *Orthochromatic Photography* (we often say "isochromatic"). According to this photographer the isochromatic effects are much more apparent when the sensitive film contains a soluble silver salt. For the reproduction of oil paintings, Mr. Braun, of Dornach, the well-known German photographer, always uses wet collodion. To-day Mr. Bedford uses collodion colored yellow by means of *curcuma, with which he coats the lens*, according to the plan recommended by Mr. Debenham. Here is the effect of this kind of colored screen. With an isochromatic plate the time of exposure is three times longer; with an ordinary plate it is a hundred times longer. Mr. Edwards remarked that this method is

necessary when reproducing pictures in which there is a great deal of blue color, but that in ordinary cases it is not necessary. Mr. J. Hubert said that more than two years ago he used a lens coated with a yellow collodion varnish. Mr. Bedford thinks that some colorless substances may exist possessing isochromatic properties.—Dr. Phipson.

Something more about Positives by Development.—Mr. Howard Farmer has experimented with several silver salts, such as the chloride, the bromide, the citrate, the phosphate, and the carbonate. He also used different kinds of developers, ferrous salts, pyrogallol, hydroquinone, and some kinds of tannic acid with ammonia, potash, and soda; then he experimented with different retarding agents, namely: Chloride of potassium, bromide and azotite of potash, oxalate of ammonium, acetate of soda, citrate of potash, chlorate of potash, and salicylic acid. The color of the prints varies slightly, according to the chemical agent used. My final conclusion from these investigations is the production of positive prints by development which cannot be told, it is said, from the best silver prints, in as many hours as days are required in the present mode of printing.—Dr. Phipson.

A Beetle's Picture Obtained by Means of its Own Phosphorescence.—Scientific people in this city are much interested in a collection of beetles sent from Cuba by the parents of three young ladies attending Miss Emily Nelson's seminary, on Golden Hill. These insects belong to the *Elater* family, of which there are many varieties, but this particular species, *Elater noctilucus*, the night-shining *Elater*, the celebrated *Cucuio* or fire beetle of the West Indies, is the first ever seen here, and rarely lives to reach this latitude. The insect resembles in form the *Elater oculatus*, the largest of New England spring beetles, and often measures from an inch and a quarter to an inch and a half in length. On each side of the thorax is a large, oval, velvet-black spot, like an eye, and from this feature the insect derives its name *oculatus*, or eyed. Each of the specimens in question has, in place of the oval spots, two translucent, opal-like spots on the sides of the thorax, and from these at night the insect throws at will a strong light, resembling two tiny electric lamps in full glow. The light from one insect is sufficiently strong to enable one to read fine print with ease. When agitated the insect also gives out a similar light from the tissue between the segments on the under side of the body. The beetle eats the pulpy substance of the sugar cane, and subsists on nothing else.

An artist in this city has succeeded in producing photographs by means of the phosphorescent light emitted by these lantern beetles. The light is of a greenish hue, but the actinic rays are abundant. The results were novel and successful beyond expectation. Taking the negative of a large tarantula, the artist attached to it a highly sensitive plate, and then illuminated it for thirty seconds by holding the beetle in the fingers in such position as would give rays perpendicular to the negative. After exposure the plate was developed in the usual way, and a clear and sharp positive was obtained. The next print was from the negative of a doll's head. This plate and others afterward came out in beautiful detail, perfectly vignetted and surprisingly sharp.

The final experiment of the artist was photographing the beetle by its own light, and then printing a picture from the negative.—*Bridgeport (Conn.) Correspondent of N. Y. Herald.*

EMULSION NOTES.

BY RANALD DOUGLASS.

Some time ago, when I published the formula by which I then made my own plates, the mails brought a good many inquiries from divers quarters. Some complained that they could not get the sensitiveness which I then claimed for the plates. At that time, unfortunately, I could not understand their difficulties. For their sakes as well as my own I wish I had kept up constant experiments since. Unfortunately my means are so small that the matter is altogether out of the question. Still, from what I have done in an experimental way

since, though not very frequent, I have succeeded in making some valuable observations, which I refer to below.

We all know that gelatine quickly sets in winter, and that it does set with great difficulty in summer. Therefore in winter gelatine can be heated longer without decomposition, or to have its setting power in any way destroyed. On the other hand, gelatine commences to putrefy at once on being wetted in summer. Even ice itself is not a sufficient preventive.

I had my attention called to this fact, by a certain manufacturer, that emulsion made by the same formula, materials, and means, in summer, works much slower than when made in winter. Several consecutive experiments by the writer confirms his views. Last summer I boiled emulsions two hours, but they came out dreadfully slow, even slower than the wet plates.

Last winter I cooked three batches one hour each, and kept them a few weeks to ripen. Each has turned out very well in regard to rapidity, being fully as rapid as the average commercial plates. Hence the seasons in which emulsion is cooked exert more influence on its speed than the novice is willing to attribute to them.

I would advise those who make their own plates by all means to cook all their emulsion in winter, and coat all away before summer steals in. No fear of emulsion spoiling. A little carbolic acid and a good cellar will keep your emulsion eight months, if not longer. When emulsion is used as soon as prepared it is apt to cause unequal sensitiveness on the plates; that part which dries the last works the fastest. This difficulty is entirely obviated by keeping it for at least a weak. Emulsion made in winter, and flowed over plates then, will not frill in summer if good and hard gelatine is used. Chrome alum is entirely unnecessary for winter-made plates.

I should never wish to buy a plate again if I could get rid of these dull, opaque spots on plates, which I cannot prevent, and don't know the cause of. Only the manufacturers know, and they, for obvious reasons, keep their mouths shut. If any one who does know, will publish an infallible remedy, he will receive the thanks of all of us who make our own plates. If he wants pay, let him state his price, provided he is not a humbug. The commercial plates of this day all seem free from spots, though they rarely are coated evenly, or made for fine view work. We landscape workers would undoubtedly prefer to make our own, always provided we could get the upper hand of these spots.

[*Translated for The Philadelphia Photographer.*]

LEGEND OF HYDROQUINONE.

BY E. DE SAINT-PRIEST.

In January last, the skilful experimenter, M. Balagny, announced to the French Photographic Society that he made use of a developer preferable to all others, and composed as follows:

Solution of Carbonate of Soda 25 p. c.	600 parts.
" " Sulphite of Soda 25 p. c.	300 "
Alcoholic solution of Hydroquinone	100 "

The advantages of this new developer were the following:

1. Great energy, allowing the time of exposure to be reduced.

2. Absence of all fog, even with plates that had seen a little actinic light (singular paradox it must be admitted).

3. Facility in using; it suffices to plunge the plate into the bath to see the image appear without need of moving it.

4. Preservation of the bath in good condition until exhausted, the time taken for development being only increased.

Let us examine these different points in detail.

We may say, from the start, that the proportions of the Balagny formula are excellent. In my opinion, it was an error to reduce the proportion of carbonate of soda, because then the development is much too long. The only useful change consists in doing away with the alcohol.

The hydroquinone in scales is dissolved with the aid of heat in the solution of sulphite of soda. The solution of carbonate is added, and the mixture kept in a stoppered bottle, notwithstanding what has been said; otherwise the sulphite of soda, becoming oxidized by contact with the air, forms sulphate of soda, and the solution becomes

brown and worthless. It is even to be recommended to make the solutions with water boiled to expel the air. A bath prepared in the manner indicated above, will be an excellent developer for very short exposures, and provided the plates are very clean, otherwise it slightly fogs on account of its great strength. Several plates may be developed in the same solution, but it requires more and more time for the operation, and they should be rather more exposed; the effect is especially appreciable starting from the fourth. It then rapidly increases up to the ninth or tenth cliché, and although care may be taken to strengthen the bath with some new developer, an exposure will be necessary at a *minimum* four or five times greater than if the development had been made with hydroquinone that had not already been used.

On the other hand, the cliché becomes more pure and hard. We see by this that this developer is not uniform in its action.

I pass over in silence the prodigious length of the development; it is enough to make a saint loose his patience. In this connection, I may say, that I believe M. Balagny, when he asserts that it is not necessary to agitate the bath during the operation, but it should be added that it is necessary to use vertical or grooved dishes. With ordinary flat dishes, spots and marblings are inevitably produced, principally in the parts that have been the most impressioned. *Experto credo.*

Photographers who have developed with pyro-sulphite, know that some plates show the dichroic veil green by reflection, and red by transparence, and the only way to avoid this defect consists in developing without sulphite, or with iron. The same plates have given me the red veil, green with hydroquinone.

I attribute the hardness of the clichés obtained with an old developer to the following fact, namely: That it becomes saturated by the use of bromine, free or in combination, arising from the decomposition of the bromide of silver. In regard to doing away with red glass, we must not expect this from the use of hydroquinone, unless we make use of *a very old developer*, having, *consequently, but little strength.* A little reflection will show us that if the developer be powerful, the weakest photographic radiations will show themselves under its action. There is no escape from this dilemma, and I am astonished that the contrary has been published. As far as I am concerned, I have always found fog in working by candle-light. It is true that I made use of rapid plates and a new developer.

To conclude, I would say, that the hydroquinone developer is especially good for instantaneous prints and for portraits. It is also good for landscapes and for reproductions, provided that it has already been used and acquired the *rum* tint. Truly it is unfortunate that it is not constant. The best formula is that given by M. Balagny, provided the alcohol is left out. If you do not want your hyposulphite bath to become colored, add some alum, and filter.

When hydroquinone without sulphite is used, the bath colors enormously, and can no longer serve. Moreover, the cliché is uniformly of a dirty yellowish-brown. This color does not change even by the use of an acidulated bath, so efficacious, nevertheless, with clichés rendered yellow by pyro. The question of the greater or less sharpness of clichés obtained either with pyro or with hydroquinone, has been largely discussed. My opinion is, that the sharpness is the same when the two developers contain a quantity of sulphite of soda sufficient to obtain the same tone. But if we make use of pyro without, or with very little sulphite, so as to obtain a cliché whose impressioned portions will be yellow instead of black, a greater sharpness may be obtained, and for the following reason: The yellow negative requires to be much less intense, much less developed in order to give vigorous positives, as its tone is but slightly actinic. Now, in a long development the reduction proceeds principally in depth, in the direction of the incidental rays, but also a little laterally, either owing to a chemical phenomenon, or more simply on account of the refraction of light in the thickness of the film. The yellow cliché, which is the least developed, is also the sharpest. I have ascertained this result by experment. Many persons develop with hypo because, they say, with iron we obtain clichés that are hard, or very gray

and often having these two defects. There is some truth in this, and I think I have discovered the reason therefor: The silver deposit formed by the oxalate developer is not of a uniform tint; it is of a bluish-black in the high lights. In printing, the shadows being too actinic, the paper is burnt in the corresponding parts, whilst the deep blacks, being opaque, give whites that are hard and flat. This state of things, however, may be remedied by making use of a bath three times weaker than is indicated in the ordinary formula. A little longer time is required for development. *But the time of exposure is shorter than with a more highly concentrated bath.* I positively assert this, although high authorities have pronounced the contrary.—*L'Amateur Photographe.*

PROTO-MECHANICAL ENGRAVING.*

BY F. E. IVES.

THE earliest experimenters in photography recognized the desirability of a photographic method of producing type blocks from nature, and the subject received a great deal of earnest attention for a long time before any successful method was realized. The chief problem that had to be solved was the automatic translation of the graduated tints or shades of the photograph into pure line or stipple. A great variety of methods were tried, and a few good examples produced from time to time; but no mechanically accurate or reliable method was ever suggested previous to 1878. In August, of that year, Charles Petit, of Paris, and myself, then at Cornell University, recognized, almost at the same moment, the principle upon which the first successful method was based. We did not, however, apply the principle in the same manner, and Petit's process was not commercially successful.

THE IVES PROCESS.

The Ives process was introduced commercially in this city early in 1881. It has been described a great many times in book and magazine publications, and is now very well known. The invention is not, primarily, a plate-making process, but a process of producing, by purely photo-mechanical means, a substitute for the hand-made pen or crayon drawings formerly required in the production of printing blocks by the aid of photography. The first operation is the production of a photographic relief, by a simple, well-known method, with bichromatized gelatine. A film of bichromatized gelatine is first exposed to light under the ordinary photographic negative, then placed in water, where it swells up into relief, highest where the negative was most intense, and lowest where it was most transparent A cast in plaster is then made from this wet gelatine relief; it has a perfectly white surface, but is high where a photographic print from the negative would be black, lower in the middle shades, and lowest in the whites. After the production of this relief cast, the process is purely mechanical and perfectly simple and scientific. An inked pad or film of elastic V-shaped lines or dots is pressed against the surface of the relief cast, until the lines or dots are completely flattened out where they meet the highest parts of the cast; when it is removed, there remains impressed upon the cast an ink picture having the appearance of an ordinary photograph, but made up of sharply defined lines and dots, which graduate in size like those of a wood engraving, and can be photo-engraved exactly like a pen or crayon drawing, or transferred to zinc or copper and etched into relief. I have some of the relief casts here, one of them bearing the ink stipple impression. The operation of producing the impression is, as you see, extremely simple, and the result is wonderful. The elastic lines of the printing pad being V-shaped, secure mechanically accurate graduation from deep shadows to extreme high lights, and the general effect can be greatly modified at will by changing the pattern of lines and dots. The best results are secured by the employment of a special elastic compound, and special ink, the composition of which has not been published.

Petit, whose original specification dates the same week as my own, blackened the surface of a white photographic relief, and cut in white lines, with a V-shaped tool,

* Read before the Franklin Institute.

on a planing machine. Although the principle is substantially the same, the processes are perfectly distinct, and Petit's was a practical failure.

For more than a year the Ives process was the only one in successful commercial operation in the world. Its first rival was a method introduced by Meisenbach, in Munich, in the latter part of the year 1882.

THE MEISENBACH PROCESS.

In this method, the photographic relief is not required, and the definite negative is made, at one operation, from a photographic positive on glass, like the well-known window transparencies. In order to accomplish this, a glass plate, bearing a tint consisting of fine lines cut through an opaque film, is placed between the positive and the sensitive plate, to cut the picture up into lines. So far, there is nothing new in the method, and if it were not more than this, it would be utterly unscientific and practically worthless. To illustrate this fact, I have made a photograph of such a positive through such a ruled tint on a large scale, which I will show on the screen. It will be seen that the result is a mere skeleton of the picture; half of the detail is lost, and that which remains appears in lines that do not graduate in size, like those of a wood-engraving, but only in color, like a photograph. It would be impossible to make a good printing plate from such a negative. It is essential that this interposer, technically known as a "grating," shall not only divide the picture into lines, but also cause those lines to graduate in size as well as in color, and that it shall do all this without completely obscuring any detail of the positive picture. There are several ways in which this can be accomplished in a strictly accurate, scientific manner, and one of these is suggested, though not fairly described, in Meisenbach's patent specification. He makes only two distinct claims, neither of which was sufficiently novel or specific to be allowed in the U. S. Patent Office. The first is merely a device for securing, with this method, the pattern of black cross lines in the shadows and white cross liness in the lights, which was already a recognized characteristic of the Ives process plates; the second is his means for securing the necessary graduation in the size of the lines. It is of interest to note that this last claim, which alone suggests the true inwardness of Meisenbach's method, has been generally omitted from printed descriptions of the process—probably because its significance was not suspected. It consists of merely giving to the "grating" a very slight movement at right angles to the direction of the lines during the exposure. This operation can be so conducted that the result will be as if each line of the "grating" graduated in color from centre to edge. Without taking the trouble to demonstrate the fact, I will state that in a negative made under these conditions, the lines will be graduated in size as well as in color, being thinnest where they are narrowest, and stronger at the centre than at the edges. It is possible to produce a "grating" that will give this result directly, without the movement, by moulding in pigmented gelatine upon plate-glass from a type-metal plate ruled in V-shaped lines; the printing film employed in the Ives process becomes a most perfect "grating" of this character if soaked in a suitable solution of dyestuff and then dried. Another method, which requires no movement, is to employ a "grating" having very narrow transparent lines, place it at some distance from the positive picture, and use a lens diaphragm having a diamond-shaped aperture. There are still other methods equally as good or better. It will be seen that in each of these cases we have really another application of the V-shape principle that had already been recognized and applied in a very different manner by Petit and myself. But even with the most perfect means for graduating the lines, this method will not succeed if we attempt to make the definite negatives by a dry-plate process, because the lines, which should graduate in size only, will naturally also graduate in color. They can be made to approximate to the required character only by employing the collodion and silver-bath process for making the negatives, and taking care to keep the silver bath in a peculiar condition, which favors the development of a coarse-grained, intense, superficial image that intensifies readily up to

the extreme edge of each dot or line. A microscopic examination of negatives produced by the two methods I have described shows a very striking difference in the appearance of the lines; those in the Ives negative are perfectly sharp and smooth, while those in the Meisenbach negative are grainy and rough, especially in the parts that represent the shadows of the photograph. But this defect in the "grating" process does not prevent the production of good printing plates, and the Meisenbach process has been very successful in Europe, where it has been operated under the personal supervision of Meisenbach himself. Its most marked defect is a tendency to produce muddy shadows, and considerable loss of color in the middle shades of the picture. The plates also require considerable fixing up, which is done very skilfully by burnishing, rouletting, and re-etching. Considerable hand-work is also usually done upon the glass positive, to emphasize outlines, faint details, etc. The process itself is cheap enough to admit of the employment of skilled hand labor to help it out in this way, but many publishers decidedly prefer purely photo-mechanical work, which cannot distort outlines and change expression.

There are new and better "grating" processes now in operation, perfectly distinct from that of Meisenbach, and combining some of the merits of each of the older methods, but they have not been published. Already these processes, none of which were in operation seven years ago, replace millions of dollars worth of wood-engraving annually. In a single establishment in our own city, three thousand of these plates were made during the past year, and hundreds of them have appeared in our illustrated magazines. I have prepared one frame of pictures to illustrate how perfectly these plates may be made to replace wood-engravings. Eight pages have been taken from *Harper's Magazine*, four containing wood-engravings and four Ives process plates of similar subjects. Three wood-engravings are from artists' brush drawings, and process plates are from similar drawings by the same artists. One wood-engraving is from a photograph from nature, and one process plate is from a similar photograph made by the same photographer. The general effect is the same, and it is admitted by critics that the process plates, which only cost about one-third as much as the wood-engravings, are quite equal to them in quality. The process plates here shown were finished without retouching of any kind—they are what we call "pure process work." But it must be confessed that many plates made by the same process are not as satisfactory as these, because the copy supplied, brush drawing or photograph, is not so suitable for photo-copying.

There is one other kind of photography, which has never been successfully realized, but which I shall say something about, because I have to announce what I believe to be a definite and important step in advance. I refer to photography in colors.

[*Translated for the Philadelphia Photographer.*]

ON THE PHOTO-CHRONOSCOPIC METHOD.

BY M. GUSTAVE HERMITE.

I PLACE the object to be examined in obscurity, and I light it by means of the electric spark. I obtain instantaneous images, perceptible to the eye, with a sharpness which would be, I think, impossible to obtain by mechanical means. A rifle ball, for example, moving with a velocity of 440 yards to the second, will only undergo a displacement during the time of an electric discharge of but a few tenths of a second; that is to say, it will be seen absolutely immovable in space. In order to measure the velocity of the motion of objects examined by this process, it was necessary to solve two problems:

1. Produce the sparks at exactly regular intervals.

2. Measure exactly the interval of time between the explosions of the spark.

The Rühmkorff coil, furnished with its hammer, resolves the first problem, the sparks are produced as regularly as the vibrations of a diapason. I have solved the second problem by simply using a diapason, the number of the vibrations of which is exactly known. This diapason

consists of a thin plate of steel, of a determined length, and fixed in a metallic handle. In order to make it vibrate, it is sufficient to bend the steel plate slightly with the finger and afterward abandon it to itself. It will make a number of vibrations always equal, whatever their size may be. Let us light this diapason with the aid of light produced by the sparks of a Rühmkorff coil in activity. If the number of the vibrations of the steel blade is exactly equal to that of the sparks, the blade is seen motionless, but bent, and it straightens itself very slowly; when completely straight, the blade no longer vibrates. It is very easy to obtain *the optical immobility* of the diapason, by causing the mitrometric screw of the induction coil to turn in one direction or the other. If the number of the sparks be exactly double that of the steel blade, this last will be seen under the form of a V, the branches of which will slowly close. Should the accord be imperfect, the branches of the V will close, and then open, and this several times in succession according to the extent of the discord. This manner of *regulating* a Rühmkorff coil to a determined number of vibrations, is very practical and very exact. It seems to me preferable to the sound method, which requires a musical knowledge and a practical ear. The use of the photo-chronoscopic method is indicated when we wish to measure simple rapid motions (vibration, rotation, etc.), in fact, whenever we do not wish to obtain a durable image of the object in motion.—*Comptes rendus de l'Académie des Sciences.*

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A "BUSINESS" HINT.

As a means of keeping up to fair prices and yet conciliating the patron at the same time, we suggest a plan called the "Talcott Method." The above copy of a blank used by a fashionable Boston photographer will explain it. Such "order sheets" are sold by canvassers or at the studio counter; and in New England studios especially are found very helpful. "The Talcott Patent Glass Mount" presents a good photograph in the lovliest possible style.

FACTS AND FANCIES.

A Word about the Price of Bromine and Iodine.—Recently a strange fluctuation has taken place in the price of the above articles. The price had advanced rapidly, for it had been learned that in the manufacturies of Strassfurt, in Germany, a decided advance was contemplated. This was really the intention of the German manufacturers; but suddenly there was an arrival in London, in one lot, of 55,000 pounds of American bromine, and for some time, at least, the price of this agent, so useful in photography, will remain about what it was before the recent advance. As to iodine, its price in London remains at nineteen cents per ounce, and that of bromine is now quoted by Burgoine, Burdidges & Co., at ten cents per ounce.—Dr. Phipson, *in Moniteur.*

Nervous Action of the Subject in the Flash Light.—Mr. Swansen has just called attention to a subject which is not devoid of practical interest. He has found that in obtaining portraits at night by means of the magnesium light—flash—it is necessary that the time of exposure should be as short as possible, as, otherwise, the features of the subject invariably express *surprise* which, as may easily be conceived, has a very bad effect. If the subject has not been previously noticed, it takes 0.2 of a second for the nerves to convey the sensation of the light suddenly produced to the brain, and thence to the nerves which give expression to the face. If, on the contrary, he has been told that the flash light is to be made use of, and he consequently expects it, the nervous action of which we have just spoken takes place much more quickly, that is to say, in 0.07 to 0.08 of a second.—Dr. Phipson, *in Moniteur.*

Hyposulphite of Soda in Medicine.—*Hyposulphite of soda,* a salt that we owe entirely to photography (as, before Sir John Herschel, the celebrated astronomer, photographer, and chemist, had made known its properties of fixing the image obtained on the plate or on paper, this salt was only a "chemical curiosity"), hyposulphite of soda, we repeat, has been recently used in medicine as a remedy for fever. More recently still, Dr. Newth has employed it with success in *septicemia,* from which he infers that we may have, in this salt, a remdy having the most happy effects in the treatment of rabies. In the treatment of aphthæ, abscesses, diphtheria, and puerperal fever, he gives, during the first days, 0.3 grammes every few hours, then gradually diminishes the quantity.—Dr. Phipson.

Captains of Education.—We have captains of industry and finance. Why have we not captains of education—men of leisure and culture, capable of enthusiasm and initiative, ready to throw themselves into such a cause and give it their earnest consideration, their generous and active support!

Among the Greeks, Plato, Socrates, and Epictetus were the teachers. Where shall we look for our great leaders, masters, patrons, even, who will see education in its true light, and force us to recognize teaching as one of the grandest of the arts—the art of arts, for it goes to the building up of the artist himself, and of ever nobler types of humanity?—*The Century for June—Open Letters.*

The *Pall Mall Gazette* did a clever thing recently. Sir John Everett Millais said he did not know what to make of the London art critics, as one condemned what the other applauded. The paper thereupon got up an article of nearly two columns, with parallel quotations from the criticisms on the Academy from the leading dailies. The result is most instructive. It quite clearly shows that dyspepsia rather than culture is the true key to artistic criticism. In numerous instances critics of the *Times, Daily Telegraph, Chronicle, Standard, Morning Post,* and other journals are materially at odds over the simplest and clearest propositions. The way in which white is called black and black white by high-salaried art judges is really amusing. If London prides itself on anything it is on the marked advance in the philosophy of art criticism. The only chance now to maintain its reputation is to have a congress of critics and agree on some canons of taste in pictorial art.

An Archæological Discovery.—A correspondent writes the New York *World* from Omaha, asking if any one "can tell us who built the pyramids of Egypt, and scientific cities, forts, and mounds all over the different continents? I write this in order to draw out investigation. I am of the opinion they were made by a people who lived on the earth much earlier than the present population, and we have no account of the upheaval of the mountains, and they all show evidences of great heat, which at the upheavals must have thrown out great volumes of suffocating gas that filled the earth and destroyed every animal that breathed the air. Man among them went with the rest. Now, the fact of many of these mounds being modelled after the saurians, mastodons, and other prehistoric animals would argue that the builders had seen the animals, hence lived in their day. Yes, in the great Robbers' Cave on the Ohio River, near the mouth of the Wabash, are many pictures of prehistoric birds and animals, and the people who made these drawings must have built the pyramids, forts, and mounds and lived before the upheaval, which left the earth to be peopled as it was originally. There are many evidences of a people having been cut off very suddenly. But more anon." A fact! Ed. P. P.

THE MYSTERIOUS IN PHOTOGRAPHY.

BY A. J. TREAT.

From time to time we read or hear of experiences in photography so wonderful, and apparently mysterious, that had not each photographer himself had similar troubles, the narrator would be accused of dreaming or—worse. I believe it is one of Mark Twain's stories, where all but one of a crowd listened with open-eyed interest to a wonderful story, that when they asked this man why he exhibited so little interest, he replied that he was a pretty good liar himself. I do not suspect any of the gentlemen who have related in the magazines of late their seemingly inexplicable experiences, of drawing the long bow, but in my own work I have always found, in time, a reason for all things; and what seemed strange and quite mysterious at first, would at last unravel itself.

What once mystified me, and afterwards amused me, was the result of teaching some of the fair sex how to use a camera. Now the photographer who has not instructed some fair one in the mysteries of dry plates and developers, and had her pose for you, and tempted you to propose to her, has a duty yet to perform, a joy to be experienced. Whoever has not yet had his head under the focussing cloth with some fair face, and carefully and at length, at great length, explained the difference between foreground and distance, has not yet finished his apprenticeship to the camera.

The old couplet should now be changed to read like this:

> "Two heads with but a single cloth,
> Two hearts that beat as one."

I once tried to teach two young ladies how to use the camera. The next day they tried to make a picture by themselves. The front board of the camera fitted a little tight, but a couple of whacks from a brick fixed that. A house in course of erection near by promised material for a view. A son of the "ould sod," mixing mortar, and called by his assistant "Moike," furnished a motive. They asked him if he would allow them to take his picture.

"Why don't you take Teddy, me helper," said he; "Teddy's better lookin' than me; ah! Teddy's the b'y for the leddies."

"We don't want Teddy," said the ladies; "we want you; you're just beautiful."

So the camera was pointed at "Moike," and he was posed standing over the mixing box, with his hoe upraised. The cap was removed, and six seconds had been carefully counted off, when it was discovered that the slide had not been drawn.

"Don't move," shouted the young ladies.

"Not for me loife," replied the gallant Mike.

This time they drew the slide correctly, after slewing the camera about ten degrees to the left, and "Moike" was took. The picture, they told me, did not come out very well. It took me a long time to make them confess that they were not sure they had taken off the cap when they made the sec-

ond attempt, as nothing came up on the plate.

Shortly after this I made a trip into the country, and made a view of a group. In developing it I was astonished to find a spectral figure at the left of the scene, standing with an upraised weapon. Whether his intention was to demolish the group, or chop his way through the fog that rapidly began to obscure the image, I could not decide; but, after much speculation, I did decide that this was the lost "Moike," "beautiful Moike."

I once borrowed a friend's camera, and shortly after I returned it, he made a trip to Nevada City, taking the camera with him. In developing his plates he found the figure of some strange gigantic beast in the foreground of one of them. The print from the negative was shown to all his friends, wise and otherwise, scientists and laymen. Even the learned professors of the university gave it up. The friends of this gentleman were ungenerous; told him he must have been out late the night before, and when, next day, he tried to photograph, he wasn't in condition to tell the difference between a polar bear and a badger.

I was the last one appealed to by my persecuted friend, who was now anxious to vindicate himself. In the foreground of the print was an animal standing upon his haunches, in comparison to the landscape in the distance, about six feet in height. It had the head of a rat, and the paws of a bear, although they were singularly long and slender. "You see," said my friend, "it isn't a bear, and blame me if I know what animal it is. I'll swear there was nothing there when I uncapped, and that I didn't make any double exposures, and that I used a plate fresh from the box."

I was puzzled until I noticed that the animal was standing upon a tablecloth, faintly outlined. I then remembered lending his camera to one of those young ladies so that she could photograph the pet of a friend—a prairie dog. I also remembered her telling that of the four plates developed one of them did not come up. It finally did come up, though, to the astonishment of several learned gentlemen.

Ruskin, the apostle of æsthetics and the prophet of Turner, writes in one of his books that he could not endure to even visit America, because there are no ruins here. If it becomes necessary to have that learned gentleman among us, I think I have discovered a means by which we can entice him.

In the Sonoma Valley, one of California's most picturesque places, there is a little cottage which was built by Stone Pasha, whom it will be remembered was a Union general of distinction. It was afterwards owned by General Sherman, and is now occupied by a gentleman who has served his country at home and abroad. Vine clad, tree-topped, with a shady veranda supported by posts that are entwined by the climbing rose, together with these associations, made it a fit subject for the amateur. A short distance away there is a fine group of oak trees, surrounded by a vineyard, and in the distance the hills that form the valley, Accidentally, the same plate was used for both exposures, and the effect is very strange. The cottage had been about one-fourth in light, so that the second exposure obliterated three-fourths of the first, putting in its stead the vineyard, distance, and the trees. But the highlights—the posts that formed the veranda, and the little patches of the house upon which the sun shone—"would not down," and the effect is very singular; the trees seem to have grown up amidst a ruin.

With careful choice of subjects, it is possible by this method of composite landscape photography, to get results that will astonish the uninitiated. It occurs to me, however, that possibly it would be used by the unscrupulous to squeeze insurance policies out of unsuspecting companies, who may have been told that photography cannot lie, and would, therefore, accept the pictures as evidence of destruction; by hotel keepers anxious to attract people to summer resorts; by the land boomer and town-lot speculator, that they may beguile the gullible; therefore, with the philanthropic spirit that actuates all photographers—to protect the public—I make known the process.

San Francisco.

The late photographic exhibition in St. Petersburg was opened by the Czar, Czarina, and Czarewitch in person. All of them are camera-stricken.

PHOTO-MICROGRAPHY FOR BEGINNERS.

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Chapter I. Apparatus.

THE MICROSCOPE.

(Continued from page 195.)

As stated in the Introduction, any compound microscope, even of the most simple form, may be used in photo-micrography; and this is repeated with the view of emphasizing the fact that the purchase of a special stand for the purpose is unnecessary to any one already in the possession of a microscope Certain forms undoubtedly possess advantages over others, and if it be necessary to procure an instrument, it is advisable to select such an one as combines these conveniences in the most compact, simple, and inexpensive form; provided economy has to be consulted. One feature is indispensable—a joint whereby the body of the instrument may be inclined to a horizontal position. An upright microscope, with camera placed above it, is a possibility, and has been recommended by some German workers, but is so clumsy and awkward, both in appearance and practice, that I do not deem it necessary to allude to it further. A monocular or binocular body is equally serviceable; in using the latter, it is merely necessary to shift the prism, thus converting the instrument into a monocular, and allowing the light to pass through the straight tube alone.

My friend, Dr. George A. Piersol, of the University of Pennsylvania, thus uses his Beck's Large Best binocular stand, and his photographs of animal tissues, both pathological and normal, have probably never been excelled. Another friend, Mr. C. Febiger, of Wilmington, Del., has made some thousands of superb negatives of diatoms (using powers as high as one-fifteenth, and amplifier), with an equally large binocular stand. In both cases the tubes were of the standard length of ten inches.

In choosing an instrument, however, it will be well to select one of the modern form of monoculars, in which the compound body can be shortened to six inches, as this allows the covering of a much larger plate at short range than is possible with a longer tube, since the sooner the rays of light are allowed to diverge after passing through the object glass, the larger the plate they will illuminate at a given distance therefrom. In my own special microscope (to be hereafter described) the body is entirely dispensed with, being replaced by a short, widely flaring cone immediately in the rear of the objective. With this arrangement the entire plate is fully illuminated and covered, even if placed within a foot of the objective.

Although a sliding tube may be employed, it will be found that the most convenient and efficient method of operating the coarse or quick adjustment of focus is by means of rack and pinion. This should be of good construction, and work smoothly, without any tendency to the jerking so frequently attending poorly made stands. The rack should not be attached to the body, as is the case with nearly all the (so-called) cheap French microscopes in the market, but to a solid bar, sliding in grooves in the supporting arm of the stand, thus insuring great steadiness and smoothness of motion. This is the plan adopted in all good American and English stands. It is important, also, that the rack be of sufficient length to allow the use of a three-inch objective at least, these low-power lenses being exceedingly useful at times.

The fine adjustment should be applied directly to and move the entire compound body. If attached to the nose piece, as was formerly the case with most stands, it will be found difficult of manipulation when the camera is extended too far to allow it to be reached by the hand, whilst a general unsteadiness and uncertainty of motion is attendant upon this mode of construction. The utmost delicacy and promptness of action are necessary in the fine adjustment of focus, and these are best secured by applying the same directly to moving the entire body. On no account should it be attached to, or move the stage, which must be a firm, steady fixture. The milled head controlling the fine-adjustment screw, should be of large diameter, to insure the utmost delicacy of motion, and be placed at the rear of the stand, either on a level with the stage, or at such other point on the arm as the construction of the instrument demands.

A V-shaped groove must be turned in its periphery, to admit the fine adjusting cord, hereafter described.

The stage, as stated above, must be very firm and steady; as immovable as the base of the microscope itself. It should, however, be quite thin, in order to permit oblique illumination, when necessary. With a stage of this simple construction, having a a couple of spring clips on top to hold the object slide in position, and a revolving diaphragm pierced with various sized openings beneath, it is possible to do a great variety of work with comparative facility, after the fingers have been educated to the very delicate movements required for adjusting an object properly, under even moderate powers. If the spring clips are elastic, yet firm, the glass slide may be moved about and the object centred upon the focussing screen without much difficulty, until high powers are brought into use; then, indeed, the operator will need all the patience and skill he is possessed of to keep the object in view at all, as the slightest apparent movement will frequently throw it entirely out of the field of view. A better form of stage is one upon which a thin sheet of metal (to which the spring clips are attached) revolves concentrically in the optic axis. In this case the rectangular movements are still made with the fingers, but the rotation of the stage enables one to place the object vertically, horizontally, or in any other desired position on the plate without effort or loss of time.

Undoubtedly, the most perfect and desirable stage for the purpose, is a well constructed mechanical one, rotating concentrically, and in which the rectangular movements are controlled by milled heads. It must, however, be of the very best workmanship, without the slightest lost motion, stiffness, or jerk at any point, and such a stage cannot be made without a considerable outlay of money. If it be inconvenient to indulge in this at the start, I would recommend the adoption of the simple rotating stage with clips, and the moving of the slide by the fingers, which will speedily acquire the habit of so doing with sufficient delicacy and precision. It is important, however, that the stage, of whatever form adopted, should be fitted with a stop for use with a Maltwood finder; the latter accessory being almost indispensable in locating the position of any desired portion of a tissue, a diatom, or other minute object, when a high power is used.

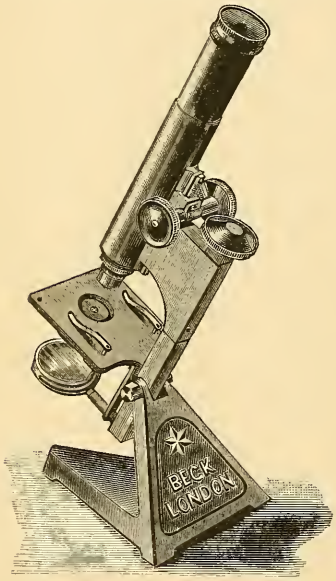
With powers under four-tenths or one-fourth, no substage condenser is necessary, but with these and higher, one must be employed. It is, therefore, essential that provision be made for its use in selecting a stand.

In the better forms of these, the tube carrying the condenser and other substage apparatus, is attached to a bar beneath the stage, and moved up and down into position by means of a rack and pinion, or a plain sliding motion. In the more simple and inexpensive microscopes, however, this tube is attached to the under surface of the stage by a bayonet catch, and may be removed in an instant, if necessary. The mirror (which is seldom used for photography) must also be mounted in such a manner as will permit it to be turned aside, or removed entirely, to to allow an unobstructed passage of light from the lamp.

Microscopes answering the foregoing requirements are furnished by a number of makers, domestic and foreign, but it may not be amiss to give a more particular description of two stands made by the Messrs. Beck, which fulfil in an eminent degree the demands of simplicity, efficiency, and economy—their "Star" and "Ideal." The former has a heavy cast-iron base, the balance of stand being brass, nickel-plated. The body is six inches long, with lengthening tube to ten inches. The coarse adjustment is by rack and pinion of as excellent workmanship as any I have ever seen; and the fine adjustment is controlled by a large milled head of the utmost delicacy and precision. The body has a joint for inclination to any angle from vertical to horizontal; the stage is provided with delicate removable clips; there is a revolving diaphragm, with openings of various sizes; a substage tube is furnished, and the mirror is arranged to swing above the stage. It is a most excellent and thoroughly well-made stand, equally adapted to table use or with the camera, and costs, with one eye piece, but $20.00.

The "Ideal" stand is of a higher grade

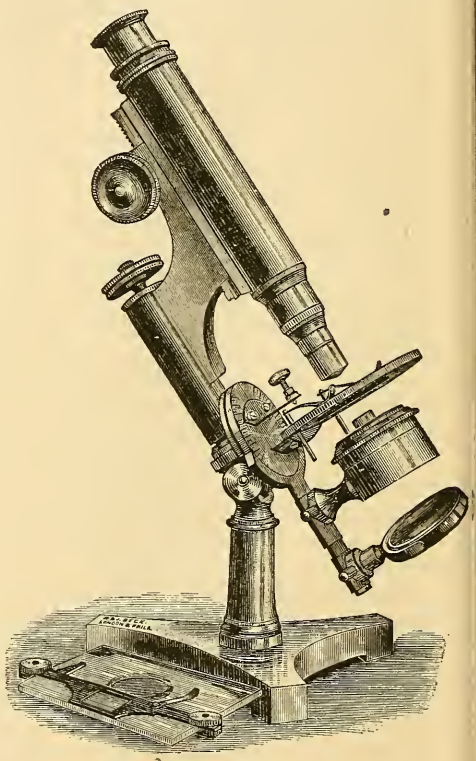
altogether than the "Star." In the actual working portions, the workmanship of the two is identical, but in design, finish, and general efficiency, the former is quite beyond the latter. It is built entirely of brass, finished in the best possible manner, is of handsome and graceful proportions, and is one of the most perfect microscopes in every particular ever made. The stand is compact and steady in every position; the body, which closes to six inches in length, is of extra large diameter; the coarse adjustment is by exquisitely smooth working rack and



The "Star" Stand.

pinion, and the fine adjustment (conveniently placed) is controlled by a large milled head, moving a screw with fifty threads to the inch. The stage is circular in form, revolving concentrically in the optic axis. The substage, carrying condenser and other illuminating apparatus, slides upon the mirror bar, which is so arranged as to be swung above the stage, leaving the whole under space clear. The cost of this beautiful and almost perfect stand, with one eye-piece, is $65.00. A mechanical stage, with the most perfect rectangular movements, concentric rotation, and stop for Maltwood finder, costs $20.00 additional.

Some years since, feeling the want of certain features not to be found in any stand then obtainable, I designed a special one to meet the same, which was constructed for me by the Messrs. Beck in the most perfect manner. This stand has proven such a success, not only in my own hands,



The "Ideal" Stand.

but those of several friends on both sides of the Atlantic, for whom duplicates were made, that a short description of it may not prove uninteresting. The design of the stand is adapted from the old "Popular" microscope of Beck, so well known to microscopists of a dozen years ago, but is altogether larger, firmer, and heavier. Indeed, it is so large that when inclined to a horizontal position, the very large milled head of the coarse adjustment (two and a half inches in diameter) can be manipulated clear of the base. The body, which is attached to the arm by a bayonet catch, can be removed in an instant, and replaced by a short, flaring cone, which

permits an immediate divergence of the rays of light after the same have passed through the objective. By this means the whole of the exposed plate may be covered, even when the camera is closed up short. The stage is mechanical, of the best construction, with rectangular movements horizontal or vertical of more than an inch, and concentric rotation in the optic axis. A hinged stop for Maltwood finder is also provided. The substage (which is self-centering) is focussed by means of rack and pinion, and will carry an achromatic or Abbé condenser, polariscope, paroboloid, spot lens, or other substage illuminating apparatus. The double mirror is entirely removable from the bar which carries it. The fine adjustment is by means of a milled head nearly two inches in diameter, and of the utmost delicacy and promptness of movement. The cost of this perfect stand, which is equally adapted to all ordinary microscopical purposes, as well as to those of photography, is $175.00

As will be seen from the foregoing, whilst it is conceded that any form of microscope, even the most primitive in construction, *may* be used in photo-micrography, it is highly desirable to procure one more especially adapted to that pupose, when about to make a selection. Those already in possession of a stand, of no matter what design, need not be deterred from attempting this work because their instrument has not all the desirable qualities that have been enumerated. If it is firm and steady, has a joint for inclination, a stage upon which the object slide can be clamped, and a good fine adjustment, the owner may confidently go to work with it, under the assurance that he can make a successful photograph, at least in so far as the *stand* has to do with success. The true workman is not known by his tools, but by the use he makes of them, and the results he produces by their aid. An enthusiastic love for the work, a determination to succeed, an indomitable will to overcome all obstacles and difficulties, will insure success in this, as in every pursuit in life, and it will be my aim to impart such knowledge as I may possess to those who care to seek after it. It is certainly a most interesting and fascinating union of microscopy and photography, and daily growing in interest and importance.

(To be continued.)

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

BY THOMAS PRAY, JR.,
OF BOSTON.

When the promise was given to the editor of The Philadelphia Photographer to write a few articles upon topics allied to photography, more of interest perhaps to beginners or amateurs, it was not expected or supposed that older amateurs, professionals, and the amateur young in practice, would wake up such a variety of inquiries, and requests for light or information upon such a great number of subjects, and the details of such a number of points connected with the various processes of making a negative or a silver print. And these inquiries come in each week, sometimes several asking almost for the same information, and from points so remote from the great centres that our personal love of the beautiful art or science would seem to have penetrated very far into the wilds of our country; and must have completely permeated many and many a person of both sexes with the same enthusiasm and love of this bewitching pastime, that has lead the writer to so many a long tramp for a shot, and so often, perhaps, made him miserable by his mistakes or careless use of a not over-extended (at that time) experience.

This explanation will make clear to those who read the first articles, where some particular topic was noted as *to be* the subject of the next, the reason why continuity *has not* been maintained, and the subjects taken up as announced. Another reason has existed, which is now becoming more marked —the opening of the "shooting season"— and requests for information of seasonable nature, and then "to give us" winter subjects later. Such being the demand, subjects will be treated as they arise, those of most importance or most asked for first, and others of incidental or occasional use afterward.

The Size of Lens to a Given Plate.

An 8 x 10 plate of medium speed, like

Cramer's 15 or Carbutt's B, cannot be made a snap-shutter plate by the use of a lens capable of covering a 10 x 12 plate; but if a person wishes to use the crank snap-shutter, and the more sensible, medium-speed plate, both on the same tramp, or box, then the snap exposure can be made by a lens of actual capacity for a plate one size larger than the plate you wish to use.

For Plate.	Buy lens to work.
4½ x 5½	5 x 8
5 x 8	6½ x 8½
6½ x 8½	8 x 10
8 x 10	10 x 12
10 x 12	11 x 14
11 x 14	14 x 17

In this way take the 5 x 8 plate, and use Dallmeyer, Suter, Euryscope, Beck, Ross lenses, or some of the other good ones, you can do snap on a snap plate, and by the use of a larger stop (than in the smaller lens, *just large enough* to cover the plate), obtain more volume of light than by the smaller lens, and so get a negative far richer in modulations, more harmonious in light and shade, and you can make a shorter exposure, in exactly the ratio that the glass in the larger lens exceeds in area the glass in the smaller one; for the glass does the business in handling the light. The stop is used quite too frequently without a proper knowledge of its real functions, so far as the resultant negative goes or is expected to go; and no one mistake causes any more, if as much, misery as the common and *useless* one, of using a fast plate and a small stop, $\frac{f}{64}$ or $\frac{f}{100}$, to make a time (?) exposure.

The stop is intended for other uses, and should be used for *positive* purpose, not to negative its intended result.

The chemical action upon the plate or the silver is produced by the quality of the light which comes in contact with the film of the plate or other medium. Now, if the definition be correct and flatness of field also present, then the more light on the plate the quicker we shall accomplish the chemical changes necessary to make a perfectly harmonious negative, provided that the latent image is made apparent by a proper development. And, in order to do this properly, the rule is, use the very largest stop you can, and have the figure on the ground-glass sharp to the edges, and where flatness of field is plainly shown. [This cannot be done by any cheap lens; a lens of the class of the few named must be used, and the better the lens the finer the results, equal skill being used in the exposure and development.]

If these points are observed, then we should obtain for our pains most pleasing results; for if we use a slow plate on landscapes and still objects we can obtain a short exposure on a plate like Carbutt's B, Cramer's 15, or some others; and then by developing in a proper manner get exactly that harmony in the shades and high lights which gives a restful feeling to our looking at the result in print, and most especially are these changes noted in cases of buildings where the sun lies upon one-side and heavy shade is present from some near building or trees. Take just such a subject and use a nearly open lens, develop to the right point, and we have a crisp, plucky negative with such soft modulations that to the eye of a lover of *pictures* it actually gives a relief, like that of stepping on a hot day out of sunshine into a cool, grateful shade; and any one with an average good microscope need not look many minutes to get the facts in this case if he or she will examine an unvarnished film, taking the slow plate and the fast one from the same subject, same time and note the differences.

When the small stop is used on a slow plate, the light is more diffused, and a greater disparity between the sky (if sun shines) and the shadows occurs, while the gradations are more abrupt, less harmonious, harsh, or tending to harshness.

Now take the fast plate, the small stop, and a time exposure.

The plate was made to be very sensitive, extremely susceptible to the action of light; and for a short exposure under a bright, strong light. Now we are to completely upset the maker's calculations; assume to know more of his calculations, on his own work, than he does; we reverse all his conditions, except the sensitiveness of his plate.

We admit a very diffuse or weak light through a very small hole for ten, twenty, fifty, or one hundred times the length of

time he intended; and, perhaps, in one-hundreth the volume he intended. And then, as some people I have heard talk in amateur societies, find fault because the plate does not come up; and I have seen over or under people's signatures, in speaking of the refractory plates, the fact that "we" or "they" used "cuss words"—fit comparison for accompanying ignorance or misdirected energy. But to return to our *funny* combination, fast plates *are not* easy of manipulation, they require an extra amount of care from the moment they come into your possession, they require an extravagant amount of time to develop, and are a ceaseless amount of trouble and care until developed—varnished; and many times are as much bother in printing as any where prior to that process; and all this when everything goes well, and camera, plate-holders, dark-room, and chemicals all come in for extra precautions, or else one chargeable with contributory negligence when possibly another factor should be the one to be charged with gross violation of first principles or lack of results.

When the small stop is used on a fast plate, we multiply by ten, twenty, fifty, or one hundred, or more the proper time of exposure in a light correspondingly reduced in intensity, but we have a plate *extremely* susceptible to white light, and we over expose the sky or high lights *hundreds of times.* Thus the dark objects lack intensity of light which is necessary, and we have as a result, if either is brought out in detail, harsh high lights, imperfect shadows, harshness all around. In a strong light we prefer a good size stop—not, perhaps, so large as for a good shutter—and uncap as quickly as possible without jarring the camera, and develop with even amounts of pyro-alkali, or keep them as evenly as is possible, and bring up the plate soft and evenly. In such a case I prefer by all odds Newton's original formula, or my own simple soda-pyro, as given in *Mosaics* for 1887.

In wood scenes, where the light is quite moderate in amount and the shadows deep or dark, with a possible dot of sky or sun here or there, I prefer a slower plate—Carbutt's A, Anthony's Transparency, Forbes's Blue Label—a pretty good open stop, and plenty of exposure. Develop rather slow, and make a thin negative, full of detail; and this means bring the negative up so it looks soft until nearly done, then spill out half the developer, and replace the same volume at once with pyro and water—three to five grains per ounce—the remaining alkali will retain the general softness and pyro finish with slightly increased density. This method in my own work has secured some of the most beautiful effects, so that others have admired and remarked on the work frequently.

Woods and water, cool, fresh, and restful, can in this way be secured with care and attention; and the snap shutter is as much out of place in such work as a dude-sunflower in a shady nook where pine cones and pine needles invite repose, and the delicious aroma of the woods—if no birds are singing—all tend to make us even briefly forget the rusty bustle and rattle to which we are confined for most of our waking hours.

There is a fitness in all that surrounds the photographic print. Harmony, proportion, and care. If the first exists, the second is very prominent, and the more of the last we exercise, the more perfect the final result. Study, then, to imitate nature and natural laws; the chemistry is natural, and if you work with, not against it, beauty and harmony will result in permanent form to your continual pleasure.

[*Translated for the Philadelphia Photographer.*]

POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 403.)

Part V. Toning in General.

The purpose of toning is to gild the silver picture, that is to say, to furnish it with a gold deposit, which imparts to the eye a pleasanter color, a better tone; thus, the terms "toning," "gilding," "coloring."

The simple silver picture, which leaves the frames with a pretty brown or blue-violet color, according as the silver paper is more or less dried out, does not keep this color in the fixing; it becomes more reddish. More-

over the silver picture possesses only a little durability, for in the course of time, if exposed to the light, it becomes more and more foxy and dirty in color.

The gold picture which is produced upon the silver picture, or, more correctly, to which a part of the silver picture is transformed, gives, on the contrary, to the silver picture lying underneath, a certain tone which not only affects the eye more pleasantly, but also really adds to its durability; for it is known that gold is a far less changeable metal than silver.

Now if one had in view merely the durability of the picture, he would continue to gild it until the whole silver picture was changed into a gold one. Then would the picture possess the greatest durability, but a less agreeable, blue color. The finest tones, therefore, are those in which the gold and silver work together, where the red silver picture shines through the pale blue gold; according as this is more or less strongly the case, will the colors between affect the eye as soft brown to violet blue.

It has been proved by experience that these pictures lose some of their tone if long exposed to the sunlight, probably only because a silver picture is still present. But one always keeps beautiful much longer, if a more or less strong gold picture lies upon it, than if this is not the case.

The Operation of Toning.

This is very simple. The pictures to be colored are wet from the last wash water as they are brought directly into the gold bath, and left long enough in it for them to assume the desired tone. This tone of the wet unfixed pictures in the gold bath is not quite the same as that which they obtain after the fixing, washing, and drying. For the most part, the pictures must be somewhat overcolored; they must be made to contain less violet, and become violet-blue, as the finished pictures are desired to be. All albumen pictures and all gold baths are, however, not alike. There are those whose tone goes back in the fixing bath. Pictures on such paper, espcially in such gold bath, must then be colored stronger, so that they shall stand to the last. He then, who begins to work with a new kind of paper, or a gold bath prepared in some different way, will do well first to go through a thorough trial, toning, fixing, washing, and drying, before he takes hold of a larger number of pictures.

The pictures are taken out of the gold bath as soon as they have obtained the proper tone, and instantly washed once or twice in the fixing bath. To be able to distinguish the tone well, there should be kept at hand during the whole time, for comparison, a picture not yet toned. The whole work of toning must, of course, be done in clear daylight, since one would not otherwise be able to pursue the operation properly, and to observe and to judge respecting the change of color through brown, brown-violet, violet, and violet-blue. This white daylight may be only a weak, that is to say, much suppressed light, as, for instance, behind a thick, white curtain; since otherwise the pictures receive stray light, and the whites are made dull. Too strong a white light in the toning of the pictures, is to be gurded against all the more the deeper the pictures are to be colored, and the longer they are to be left in the gold bath, so as to get the desired tone.

The gold bath can be very differently prepared. There are manifold receipts for its manufacture, the best of which are given in the following chapter. The effect of these gold baths is only in general the same. Most toning baths have their own specific color tone.

Upon what the Toning and the Picture's Color are Dependent.

The more or less quick course of the toning, and the picture-color obtained thereby, are dependent upon:

1. The nature and chemical combination of the gold bath.
2. The quality and thickness of the albumen layer.
3. The quality of the silver bath used.
4. The duration, relative to the more or less longer effect of light.

No. 1. The effective ingredient of the gold bath is the gold chloride, which either as such, or in its double connection with chloride of potash, chloride of soda, etc., is used in preference. A simple solution in water of the salt would tone; nevertheless, it is

usual to make additions of different chemicals. The gold salts of the market are always acid; they contain free muriatic acid, which hinders the reduction of the gold salt, or retards it very much. The free muriatic acid can be made harmless, by mixing with the gold solution either one of the carbonates of the alkalies, or alkaline earths, up to full neutralization, or with different salts of the other weak acids, such as acetic, boric, or phosphoric acid, etc., also from salts which instantly combine with the free muriatic acid of the gold salts. The weak acids thereby becoming free, have less power to injure the reduction of the gold than the muriatic acid.

The aqueous solution of the gold salts only keeps unchanged when it is acid; if it is neutral, then there results in time a gradual reduction, particularly in the light; if it is alkaline, then the reduction proceeds more quickly. The connection between gold and chlorine is, in the latter case, the weakest, and in this condition of unstable combination, the gold precipitate can very readily be caused. Out of this follows directly:

Alkaline gold baths work most energetically and most quickly.

Neutral gold baths work more weakly and slowly.

Acid gold baths are the weakest and the slowest.

And, further, alkaline gold baths need, in order to produce a sufficient gold precipitate, the least quantity of gold—acid baths the relatively greater quantity; finally, alkaline gold baths yield very quickly to decomposition, also, when they are not standing in use. On the other hand, neutrals and acid gold baths work constant; that is to say, they can be kept, and with corresponding strengthening, can always be used again. Moreover, the color also of the gold precipitate obtained is different. Acid gold baths give a tone which, from a rich brown, runs up to a purple-violet and cyanine-blue; neutral and alkaline gold baths give a tone which runs more into black-violet. Besides coloring, the acid gold baths always blue somewhat more; that is to say, the pictures appear after completion bluer and darker colored than in the gold bath while neutral, and, still more, alkaline gold baths allow the tone to lower somewhat. Finally, an important disadvantage of the acid gold bath must be recorded, it causes blisters in those papers which are liable to blister in the washing after fixing.

A paper which gives no blisters with an acid toning bath, generally makes none. In regard to economy, the advantage lies, manifestly, with the neutral gold baths, because they (*a*) are nearly constant; (*b*) the quantity of gold need not be too great; (*c*) the occasional strenthening needs to be only a little higher, as the actual consumption corresponds to the silver bath.

Alkaline gold baths tone with still less gold, but must be made fresh every once in a while.

The surplus gold, which is not used up for the coloring, is lost in the process (that is in the residue).

Acid gold baths require too high a quantity of gold, and are only used to acquire a certain purple tone which a neutral gold bath cannot produce. In order to obtain effective neutral gold baths, carbonate salts can be best recommended for the neutralization of the muriatic acid, for these are not soluble in water; as, for instance, chalk (precipitated carbonate of lime), carbonate of barium, and carbonate of magnesia. They give the proper neutral baths, and can also be used, at least the two former, in excess. The alkaline carbonates, since they are soluble in water, when used more plentifully than is requisite for neutralization, give alkaline gold baths. Borax and others, the same. The chloride of lime tone bath, although it works alkaline in consequence of the lime compound in it, yet it is not decomposed so quickly as the other alkaline baths, but remains more constant, owing to the free chlorine which it contains.

Toning baths whose muriatic acid is neutralized only by salts of acetic, tungstic, citric, and other acids, but not at the same time by carbonates, and which, therefore, contain the salts referred to in a free state, remain more or less acid, and, in consequence, hold constant for a long time.

No. 2. The quality of the albumen layer is of consequence by its influence on the toning, in so much as all too-strongly acidified albumen tones very slowly, and is more

suitable for the warm browns than for the different violet tones.

The thickness of the albumen layer also plays an important part. The thicker the layer, the slower—and the thinner it is, the quicker the picture's toning, under otherwise similar conditions; and in the same proportion to the time of toning stands the consumption of gold and the succulence and depth of the picture's color.

This is most striking in the paper albumenized only once. Every practitioner will confirm this who has used such paper in whole-sheet pictures. It is customary in this case to print the sky on the less strongly albumenized side, or that part of the picture which contains the less deep tones. Richness and depth of the picture's color depend much upon the thickness of the layer. The slower time of toning in the thickly albumenized paper, causes a very long succession of soft tones from warm brown up to deepest black-violet, which can never be brought out upon the thin albumenized paper, notwithstanding a still greater dilution of the gold bath, a relative retarding of the toning, because the scale of colors in this is a far shorter and less rich one than in that.

On the other hand, it must not be forgotten that, aside from the many other inconveniences which accompany thick albumen, the extremely plastic and effective copies upon thick albumenized paper are much more costly; for, under the same conditions, the silver and gold consumption stands in direct proportion to the thickness of the albumen layer. It has recently been asserted that the albumen papers cannot be colored "deep blue" any more, because there is not enough silver in them. This is only partly correct. This tone can be obtained upon strongly salted papers easily—but it can also be obtained just as beautiful on the papers of to-day, only acid gold baths must be used; then tone slowly, and with much gold. The economy of sensitizing requires weak salting, for the former strong salting was very costly for photographers. However, whoever wishes to have a very strongly salted paper, can purchase it himself from the manufacturers.

No. 3. The quality of the silver bath used is of influence upon the tone, in so much as all acid and old silver baths, containing strong nitre and much organic substances, retard the toning, and injure the beauty of the color. The supply of gold is relatively higher for acid silver baths, because stronger gold baths must be used.

No. 4. Pictures which, according to the thinness of the sensitized layer, or in consequence of under-printing, are not deep enough, tone relatively quickly and less rich. On the other hand, very deep pictures color slowly, and give richer and deeper tones, since they have a thicker sensitized layer, and sufficiently long exposure to the light. The proportion of the silver picture shining through the superficial gold picture, plays an important part in the richness and strength of the tone.

In regard to the consumption of gold, it is still to be mentioned that this is largely dependent upon the pictures themselves. Dark pictures, as sculptures upon a black background, must naturally contain more gold in the bath than, for instance, light, scattered, or open subjects.

Toning Baths.

There are many receipts given for the toning bath, the best known and most frequently used of which are found in the following chapter.

For all these baths, however, the following important requisites must be observed:

1. Sufficient quantity of gold.

2. Pure distilled water for working with; it must be absolutely free from all organic substances.

3. Sufficient temperature in the use.

4 Keeping in a dark place, free from dust.

5. Neutral or alkaline, not acid, reaction of the weakest.

No. 1. The sufficient quantity of gold is particularly to be mentioned, because it sometimes happens that an error is made concerning the true quantity. This will occur if the gold chloride, or the other gold salts used, contains foreign chlorine compounds.

No late analyses of the gold salts now produced have been made, but, in 1863, Prof. J. Pohl found with 53.22 per cent of pure chloride of gold and soda, 46.78 per cent. of

chloride of soda as adulteration. It is scarcely to be supposed that adulterations to such a degree occur at the present day, but even to-day, in examining with alcohol or ether many adulterated gold salts, alkaline chlorides are found. As gold chlorides, and chlorides of gold with alkalies are soluble in alcohol and ether, while chlorides of soda, etc., are insoluble, by dissolving in alcohol or ether the latter are easily recognizable as white crystals. It is incumbent upon one to convince himself of the purity of the gold salt, or, better still, to make his own gold salts, as many practitioners do. [Directions for production hereafter.]

No. 2. Pure water, that must, in particular, be free from organic substances, is of great importance to the durability of the gold bath, since traces of organic substances cause the reduction of the gold itself in the dark. Distilled water should be absolutely free also from organic substances, yet such substances can easily be added in the form of dust.

No. 3. The gold bath should possess a sufficient temperature, at least a warmth of 20° C.; cold makes it work much slower. Separate gold baths are used with higher temperature.

No. 4. The gold bath suffers reduction in the light, just as it is greatly reduced by organic substances in the form of dust. The separated gold is lost for the toning.

No. 5. Strongly alkaline gold solution would decompose too quickly; a strongly acid gold bath does not usually color.

(To be continued.)

THE HUMOR OF IT.

Tonie.—Sam, I am got de bes invenshin fo'hiding de defective camera yet obvented. Mr. Anthony wid his carpet-bag am no whar. It will catch eberyting; obvade de perliceman; scare nobody, and only a nigger could hab invented. Guess.

Sam.—No, sir! I am no export on such apratsis, and I give it — do you hold it under de arm?

Tonie.—Oh! fo' suah! It works at bofe ends. It can be fired at a departing cherub from de rear, while de park guard in de fore holds up his hands and says, "don't shoot."

Sam.—Let it come, wid your snappest shutter den. What am de idea you hab develloped?

Tonie.—It am de watermillion!

Correct Diagnosis.

Doctor (feeling patient's pulse).—What is your husband's business?

Patient's Wife.—He is a photographer.

D.—Has he been working hard of late?

P. W.—I don't know, doctor. He took the portrait of four babies yesterday.

D.—H'm! Brain fever.—*Boston Courier.*

Not a Follower.

Photographer.—You spoke in that business notice about my being a follower of Daguerre.

Newspaper man.—Yes, that's all right.

Photographer.—Well, it isn't all right. I want you to understand that I'm a follower of nobody. I am the great original Jenks, and I don't propose to pay for any business notice that puffs a rival.—*Tid-Bits.*

Photographing Washington's Uniform.—The Washington correspondent of the Boston *Post* writes to that paper of an interesting incident which occurred at the Smithsonian Institution lately. "This was the photographing of the costume worn by General Washington when he resigned his commission in the army to the Continental Congress of Philadelphia. Mr. John Noah, the son of a well-known newspaper correspondent, who is clerk of the institution, was selected as the subject by whom the clothes should be worn. Mr. Noah is a young man, more than six feet in height, and of spendid physique. General Washington's uniform fitted him perfectly. A painting of Washington, now in the possession of the institute, shows him to have been not unlike Mr. Noah in appearance at the latter's age. The photograph to-day, after Mr. Noah had undergone a certain preliminary fixing, is said to be an excellent representation of Washington at the age of twenty-four."

[Does it not look as if material for the camera is growing scarce in the national capital when resort must be had to such a

composite of "chestnuts," as George's coat —and John—and Noah?—Ed. P. P]

And now since they are making trunks with a detective camera attachment, baggage-smashers and strap-stealers are on a strike.

SOCIETY GOSSIP.

Second Session of the Association of Texas Photographers.—At 3 p.m., June 7, 1888, pursuant to the call of the Executive Board, the second session of the Association of Texas Photographers was convened at Waco, Texas, the President, J. H. Webster, in the chair. The Secretary being absent, H. B. Hillyer, of Dallas, was appointed to act *pro tem.* A goodly number were present from various points of the State.

Awaiting the arrival of others, the books were opened for enrollment of new members. Whereupon the following became members and paid their initiation fee: E. Frey, of Corsicana; E. M. Tucker, R. S. Sherrill, and T. E. Loughlin, of Dallas; and J. C. Deane, of Waco.

J. T. Blessing was appointed Treasurer *pro tem.*, in place of his absent father.

Miss Blessing, Miss Jackson, Mrs. Deane, and Professor Eythe were invited to seats with us.

Letters of cheer and fraternity were read from several photographers who, from various causes, were not permitted to be present.

Messrs. Tucker Bros. & Loughlin showed some beautiful specimens of their electric gold tombstone picture, explained the method of its production, and its great durability.

A short recess was taken to examine the various specimens of work on exhibition.

The meeting being called to order, a vote of thanks was tendered the reporters of the *Dallas News*, *Galveston News*, *St. Louis Globe-Democrat*, and the *Waco Evening Day* for the interest manifested by them in reporting our proceedings.

Mr. J. D. Jackson invited the members present to a banquet at his house that night.

Meeting adjourned until 9 a.m. Friday.

Friday, June 8th, 9 a.m.

Meeting pursuant to adjournment. Mr. Jackson, Committee on Insurance, reported nothing accomplished, but had hopes of justice being done us in the future. The Committee was continued and increased to three to continue their efforts. H. B. Hillyer, of Dallas, and T. J. Wright, of Houston, being added to it. And the Committee thus formed to memorialize the Board of Underwriters, and set forth the real dangers of our business. H. B. Hillyer, Committee on License Tax, reported that legal advice is to the effect that our profession, being a mechanical as well as a fine art, and both under the State Constitution being exempted from license tax, therefore the license levied upon us by law is unconstitutional, and the courts, if appealed to, would, in all probability, set aside the law.

A committee of four was appointed to memorialize the Legislature upon the subject of license. H. B. Hillyer, Chairman; D. H. Swartz, E. Frey, and J. H. Webster.

Speeches were made upon the subject of prices, upon fraternity of feeling, and professional courtesy, by J. W. Weatherington, E. Frey, D. H. Swartz, J. D. Jackson, J. C. Deane, and others. And also a fixed determination was expressed to aid each other, and to sustain the dignity of the art, and to uphold the Texas Photographic Association.

Mr. Deane offered resolutions to change the By-laws so as to change the time of meeting from semi-annual to annual; laid over under the rules.

For next place of meeting Galveston, Corsicana, and Fort Worth were put in nomination. After a scattering vote, by ballot, Fort Worth was unanimously chosen. Mr. D. H. Swartz was appointed Chairman of the Reception Committee at that place. The Executive Committee was instructed, by resolution, to appoint the time of meeting to be at nights in Fort Worth during the Dallas fair, next October.

A vote of thanks was given to our local Secretary, Mr. Jackson, and to Mr. Deane, for courtesies extended to the Convention.

Resolved, That we, the members of the Texas Photographic Association, have ex-

amined the pictures of Messrs. Tucker Bros. & Loughlin, known as the electric gold pictures, for tombstones, and we think the process has decided merit, and recommend all photographers interested to investigate its claims.

Resolved, That a vote of thanks be extended to Mr. Hill for the use of his Business College Hall, free of charge, to meet in, and other courtesies.

H. B. Hillyer's paper upon the "History and Progress of Photography" be deferred until the next meeting.

We have read with regret the repeated attacks made by the editor of the *Eye* upon the affairs of our Association, predicting its failure, etc., and we condemn such acts as unwarranted and uncalled for, and we express our indignation at the same in strongest terms.

The Secretary was instructed to furnish the report of the proceedings to the *St. Louis Photographer* and PHILADELPHIA PHOTOGRAPHER.

Adjourned.

H. B. HILLYER,
Secretary.

THE DEATH OF MR. CORLIES.

SPECIAL MEETING OF THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.—A special meeting was held Wednesday evening, June 20, 1888, for the purpose of taking suitable action in regard to the sudden death of Mr. S. Fisher Corlies, late Treasurer of the Society.

The President, Mr. Frederic Graff, occupied the chair, and briefly announced the object of the meeting.

In addition to an intimate personal friendship with Mr. Corlies, he had been associated with him as a member of this Society since the date of its organization in 1862. He had also known him intimately as a member of the Zoological Society, and in many other organizations devoted to scientific objects and the public good. He could safely say he never knew a better man, or a more unselfish one. Always ready and glad to impart to others any knowledge he had acquired, he was truly a friend to every one, and had no enemies. His duties in this and all other organizations were always conscientiously and thoroughly performed.

Letters were read by the Secretary from Edward L. Wilson, of New York, and Charles R. Pancoast, of Waterbury, expressing deep regard for their deceased fellow-member, and mourning his loss.

The President appointed Messrs. Browne, Samuel M. Fox, Coates, Springs, and Caleb Cresson a committee for the purpose, who prepared the following minute, which was ordered to be entered upon the records of the Society:

"The Photographic Society of Philadelphia have heard, with deep regret, of the death of their late fellow-member, S. Fisher Corlies.

"Connected with this Society from its organization, its Treasurer for over a quarter of a century; constant in his attendance at its meetings; firm and decided in his views, yet ever considerate of the opinions of others; always ready to aid with his sympathy and counsel; his genial, unselfish nature endeared him to all, and made his influence—quiet and unassuming though it was—most potent for good in the history of the Society.

"Through years passed in his companionship we recall many pleasant recollections of his love for nature and all that is pure and beautiful; his skill in photography has left us with treasured mementos of happy hours passed with him, never to be forgotten.

"His death has cast a feeling of profound sorrow over this Society, and while we bow with reverence to the Almighty Power that has taken away our beloved member, we turn to his sorrowing family and respectfully offer our heartfelt sympathy in their irreparable loss."

On motion of Mr. Coates, Mr. Samuel M. Fox was appointed Treasurer *pro tem.* for the unexpired term of Mr. Corlies, or until a regular election can be held.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

OUR PICTURE.

THE "Study of a Child" is an example of the product of that most perfect of all the

now very perfect photo-mechanical processes, the photo-gravure. The negative was made from an oil painting belonging to a private gentleman in Boston. This gentleman has recently prepared a souvenir portfolio made up for his friends, of about fifty handsome photo-gravures of his residence, gardens, interiors of his house, paintings, bric-a-brac, and what not, composing his splendid properties. It is one of the most elegant and elaborate affairs ever accomplished by photography. The idea was his own, we believe, but it is one which every photographer in America is welcome to follow wherever and whenever a gentleman so generous can be found to follow suit (and we believe that there are many such) if our enterprising photographers will hunt them out and "talk them into" a similar scheme. We start you with the first, and application must be made to the Photo-gravure Company, 853 Broadway, New York, who made our prints, for further particulars. There is no limit to the amount of business possible in this line. We understand that *Sun and Shade*, the new pictorial, is to have a photo-gravure supplement in every issue.

THE WORLD'S PHOTOGRAPHY FOCUSSED.

THE *Amateur Photographer*, of London, speaks in complimentary terms of Dr. Janeway's "Practical Photography Fully Explained," and says it "is a very valuable addition to the literature of practical photography."

"ANOTHER contribution deserving of mention is that by Mr. Thomas Pray, Jr., on 'Fixing after Development,'" likewise says the *Amateur Photographer*.

THE *Cyclist's Toning Club Gazette* publishes a line of *quite six hundred hotels* in Europe where dark-room accommodation is afforded. Eureka! Soon a photo-film will reach over the world.

BY the end of the year our subscribers will find that our current volume has supplied them with the equivalent of three splendid, valuable books by means of the papers by Dr. Janeway, Mr. Pray, and Dr. Just, such as would cost, in book form, as much as a year's subscription to the PHILADELPHIA PHOTOGRAPHER.

MR. JAMES LANDY, the Cincinnati artist-photographer writes: "The PHILADELPHIA PHOTOGRAPHER is growing better with age;" and he knows, for to our knowledge he has read it for nearly a *quarter of a century*.

DURING the months of July and August the regular meetings of the Society of Amateur Photographers of this city will be suspended, though the rooms will be opened to the use of members.

PHOTOGRAPHERS are not always poets, though their genius is always of the taking sort. Here is a chance to judge. From a Missouri circular:

"Now tell it to Tom, to Harry, to Jim,
That Harmony's studio is the right spot;
For there be sure you're not 'taken' in,
Though all who come are sure to get shot.
Prices lower than the lo! est."

MESSRS. ROBERTS & FELLOWS, No. 1125 Chestnut Street, Philadelphia, not only print for the PHILADELPHIA PHOTOGRAPHER, but do an immense printing business for the trade. No one does better work.

AMATEUR photographers in this country are sometimes subjected to great annoyances by people who do not understand or appreciate their innocent pursuits, but they do not suffer the penalty for curiosity inflicted upon an amateur who attempted to take a picture of some Moorish soldiers. While he was adjusting the focus, and, therefore, at a disadvantage, some of the soldiers brained him, and also assaulted his companions.

PROF. J. M. EDER has delivered to a distinguished audience, including some members of the imperial family, in the Vienna Museum of Art and Industry, a couple of lectures on "Photo-Mechanical Printing Processes as Substitutes for Woodcuts," and on "Photo-mechanical Printing Methods as Substitute for Copperplates. These lectures were illustrated by some very instructive

demonstrations of photo-zincotypy and heliogravure, by Herren, Jaffe, and Pustet.

Some amusing correspondence in the matter of medal awards is going on among the English photographers. As in our own country, so there, medal-takers are using their honors to abuse their neighbors. Another reason why medal giving should be stopped.

The Liverpool Exhibition.—According to the Liverpool *Courier*, there is a sufficient surplus of funds from this exhibition to go far toward the establishment of a photographic club house for Liverpool.

Amateur photography is rampant. It has reached even the classic shores of Farmington, Conn., where a number of distinguished young ladies learn how to shoot the camera under the direction of the veteran amateur, Prof. Karl Klauser, cuidevant musical director of Miss Porter's school.

The Photograph Anticipated.—Among the "Fables" of Fénélon, written in 1690, for the education of the Duc de Bourgogne, grandson of Louis XIV., is an interesting narrative called "Voyage Supposé," and among the marvels of which the story is made up, we read: "There was no painter in all the country, but when they wished the portrait of a friend, or a picture representing some lovely landscape or other object, they put water into large basins of gold and silver, and made this water face the object they wished to paint. Very soon the water would congeal and become as the face of a mirror, where the image dwelt ineffaceably. This could be carried wherever one pleased, and gave as faithful a picture as any mirror." The good bishop when he wrote the above, little thought that the fabulous wonders devised by his imagination would so closely resemble the sober reality of a century or so later.—*American Notes and Queries.*

PRACTICAL POINTS FROM THE STUDIO.

Strengthening of Gelatino-bromide Cliches.—For clichés developed with pyro, on coming from the hyposulphite fixing bath, plunge, without washing, the weak cliché into

Distilled Water . . .	800 parts.
Sulphate of Iron . .	120 "
Chrome Yellow . . .	20 "

After sufficient strengthening, wash thoroughly, and in abundant water, the cliché, which has then acquired a greater intensity. If the strengthening has been pushed too far, the intensity may be reduced by plunging the cliché, for a few moments, into water acidulated with chlorhydric acid. — *From L'Amateur Photographe.*

Toning Blue Ferro-Prussiate Prints. —Prepare a solution composed of

Borax	70 grammes.
Water	1000 "

Add sulphuric acid in small quantities until litmus paper is slightly reddened; add a few cubic centimetres of ammonia until the alkaline reaction again appears, then place in the solution obtained ten grammes of crude cachou, and allow to settle, stirring occasionally. To tone a print, immerse it in this bath for one minute, or more, according to the desired tone. Wash in several waters, and the operation is ended. The two prints submitted were toned in a cachou bath three months old. The bath had remained exposed to the air in a large open vessel. It is, therefore, certain that it will keep its qualities for a long time. For richness of tone, these prints are comparable to the best albumen prints. This result had never before been obtained.—Paul Roy, in *Progrès Photographique.*

Keeping Pyro.—Your papers are going on about pyro and the keeping of it. What bosh it all is. One writes "use nothing but dry pyro;" another tells you to "make a solution like a chemist's shop." I find the way to keep pyro is to mix it with meta-bisulphite:

Potash	2 ounces.
Pyro	½ ounce.
Meta-bisulphite . .	½ "
Water	19 ounces.

Each drachm will contain 3 grains of pyro, and that solution will keep clear and good

for ever, I believe; anyway, I have used it six months after mixing, and found it was as good as the day it was mixed. Another test I tried. I took 2 ounces of water, and added 2 drachms of meta-bisulphite and pyro solution to it (making 3 grains to the ounce of water). I put this in an open measure and put on a shelf of my dark-room for over ten days, no cover or anything over it, and after the ten days I developed a negative with it, and found it worked quite as well as if just mixed; of course, I did not add my soda or ammonia till I was ready to develop, but it showed that the meta-bisulphite kept the pyro quite good.

Nothing new in our photographic world; all are now getting ready for summer work.

A. R. DRESSER.

LONDON.

AN EXCELLENT PASTE.—

Flour .	. 45 grammes (1½ fl. ozs.)
Water .	. 280 c. c. (9½ fl. ozs.)

Make an intimate mixture, and add, stirring, 3.5 c. c. (60 drops) of concentrated ammonia; allow to repose for ten minutes, adding 240 c. c. (8 ounces) of water, and bring the mixture to the boiling point as rapidly as possible, agitating continually; add a few drops of oil of cloves, and pour the whole into a bottle which is to be kept well stoppered. This paste is liquid, adheres well, and may be kept for a long time. *Photographic Archiv.*

THE BEST MANNER OF PRESERVING PYROGALLIC ACID.—This, according to Mr. Cramer, consists in the use of sulphurous acid. This acid is the best agent for preserving solutions of pyrogallic acid. It is easy for any one to prepare this acid, by taking sulphite of soda, and a definite quantity of sulphuric acid. Add to 180 c. c. (6 fluidounces) of water, 1 c. c. (20 drops) of sulphuric acid, and 3.50 grammes (54 grains) of crystallized sulphite of soda. After solution, add 30 grammes (1 ounce Troy) of dry pyrogallic acid.—*Photographic Archiv.*

ON THE USE OF CHLORIDE OF IRON IN FERROUS-OXALATE DEVELOPER.—The soluble salts of iron all form with oxalate of iron. Free acids then produce, according to their nature, different effects. As salts of iron, which may be used, we may mention the tartrate, the lactate, and the chloride. Among these salts the chloride is the one giving the most favorable reaction. Its production is easy; by treating shavings or filings or iron nails with chlorhydric acid, we obtain a solution of chloride of iron which is very suitable. It is only necessary that it should be slightly acid. The developer formed of one part of chloro-ferric solution, and three parts of the oxalate of K possesses extraordinary reducing power, which would allow a reduction in the time of exposure of one-third, which is very desirable in making instantaneous pictures of the extra-rapid kind. — *Progrès Photographique.*

TO RESTORE NEGATIVES WHICH HAVE BEEN EXPOSED TOO LONG A TIME TO THE ACTION OF LIGHT, AND OVERDEVELOPED. —Operate, according to Mr. H. Jandaurek, in the following manner:

Prepare a solution of

Sulphate of Copper .	2½ drachms.
Table Salt . . .	1 ounce.
Distilled Water . .	4 fl. oz.

In using, take one part of this solution and ten parts of water. The well washed negative is placed for a few minutes in the liquid, agitate slowly, and keep it in this bath until, seen directly or by transparence, it is found to be coated with a whitish precipitate. Wash well in water and place in a bath made with one part of ammonia, and from six to eight parts of distilled water. This bath should be prepared at the time of using it. After a sufficient lowering of the tone, thoroughly wash. The rapidity of the action depends upon the strength of the ammoniacal solution, which should always be of recent preparation. Failures can only be attributed to careless manipulation and want of cleanliness. It is especially necessary to wash thoroughly to remove the sodic reagent (for fixing). The bottle containing the solution of sulphate of copper should be well agitated before using.—*Photo. Archiv.*

REPRODUCTION OF PAINTINGS.—Mr. E. Edwards, of New York, pays much atten-

tion to the reproduction of oil paintings. He invariably uses isochromatic plates, and he writes that by means of these plates he has obtained excellent reproductions that it would have been absolutely impossible for him to get by any other means.—Dr. Phipson.

Photographs of Lunar Eclipses.—At the London Astronomical Society, the photographic results obtained during the last eclipse of the moon, were discussed. It was important to know if by means of the prints obtained, it would be possible to determine the time of the commencement and the ending of the eclipse. The majority of the members present were of the opinion that such measurements are not sufficiently exact for scientific purposes; and Mr. Common, who has had considerable experience in the matter, thinks that unless a more vigorous plan is adopted for obtaining photographs of eclipses of the moon, and unless they are carefully compared with the ordinary observations made with the telesscope, these first can be of no value.—Dr. Phipson.

Converting a Print made on Eastman Paper into a Platinotype.—After development, fix, wash, and place the print face downward in:

Chloroplatinate of Potash .	15 grs.
Distilled Water . . .	34 fl. oz.
Chlorhydric Acid, pure .	3 fl. drm.

The print should remain twenty minutes in this bath, then be rapidly washed and placed in a solution of chloride of copper. By this operation the silver is converted into chloride of silver and acquires a brown tint. Should the tone be too weak, it may be strengthened with the oxalate developing bath. All these operations may be made in diffused light. Wash well for fifteen minutes, then dry.—*Moniteur.*

Editor's Table.

New Catalogue of the American Optical Co.—Seventy-eight pages of matter covered with woodcuts and descriptions and prices of the apparatus manufactured by one factory alone, is surely a wonder, even in these times of photographic rapidity. Such a one has been issued by the Scovill Manufacturing Co., proprietors of the American Optical Co. It is beautifully printed and bound in an original cover in imitation of half morocco and title on the sides and back. Every apparatus buyer should study this catalogue before looking elsewhere.

We are requested by the Amateur Photographic Club of Vienna to state that the time has been extended to Americans who wish to compete for the medals, and all pictures delivered by August 10th to Messrs. L. W. Morris & Sons, express forwarders of New York, will be forwarded to Vienna and returned to America free of expense.

Removed.—Mr. S. G. Nixon, the well-known portrait artist, has removed his studio from 813 Arch St. to 154 N. Ninth St., Philadelphia. Mr. Nixon has been known to the fraternity so long that we hardly need to recommend him.

From Mr. F. E. Ives, 907 Filbert St., Philadelphia, we have received some photographs of the solar spectrum made on Seed plates No. 25, treated with cyanine, by different methods. The centre one is by the Ives method and shows the gradations from red to violet with surprising detail.

Mr. C. E. Shorey, of Augusta, Maine, has favored us with some samples of his excellent work, among which is a portrait of Mrs. Shorey, skilfully posed and lighted. We are glad to see on Mr. Shorey's price list "$5.00 for cabinets and $3.00 for cards." His work is worth it.

Mr. H. L. Haupt, Butte City, Montana, has favored us with the liveliest collection of babies that has come to our desk for some time. He has a wonderful talent for securing the little creatures in natural attitudes and with lifelike expressions. Only here and there do we see a

tiny hand or foot that has been too quick for him to catch. The technique of his work is also excellent.

CARBUTT'S "Hydrochinon One-solution Developer" is becoming, as he calls it, a "Universal Developer." Mr. Carbutt claims that it will be equal to if not surpass pyro in speed of action, while its developing powers seem to be without limit. Fifty negatives have been developed with eight ounces of developer. We all know that Mr. Carbutt does not assert what he knows is untrue.

A NEW STUDIO AT JAMESTOWN, N. Y.—Messrs. H. J. PRUDDRN and W. J. DUNIHUE have opened a new studio and art establishment at No. 21 W. Second Street. They have furnished it with all new and desirable accessories necessary, and as for quality of work, will make the best. Their gallery is on the ground floor with an operating room thirty-five feet back. They also propose to operate a branch establishment at Lakewood on Chautauqua Lake.

A JUST DECISION.—The friends of the veteran stockdealer, W. D. GATCHEL, Esq., of Louisville, Ky., will be glad to know that he has come out the winner in the suit against him by the assignee of the bank which swindled him out of nearly all of his money. There is no measureing the trouble which Mr. Gatchel has been given by the wrongdoer. All his friends will congratulate him on his triumph and wish him continued success.

MR. A. B. STEBBINS, Secretary, Canisteo, N. Y., announces the organization of the photographic society of Steuben County and vicinity, and extends an invitation to all photographers convenient to join, which they can do by communicating with him. The effort is for the protection and education of professional photographers.

CORRECTION. — We find we are in error in stating that the *Moniteur* failed to credit our magazine with some translations made from our pages. The translations were credited to our excellent Brussels contemporary, but the articles were credited to their source. Pardon.

THE ACME BURNISHER.—The Acme Burnisher Co., of Syracuse, N. Y., come to the front once more with their excellent machines, each made under a new patent and of sizes from eleven to twenty-six inches. Their large burnishers are really two machines in one, for it is possible to heat one end of the burnishing tool in five minutes and use it for small work, or if larger work needs to be burnished the whole tool can be heated. Their system of flue heating is claimed to gain time, to save fuel, and to wear less upon the burnisher than any other method. They send descriptive circulars free to inquirers, and their advertisement will give further details.

ANTHONY'S *International Annual* presents an array of contributors that was never before surpassed by any similar publication. It is certainly marvellous how much talent has been collected in this splendid book. A more extended review of it will be presented after it has been digested a little more thoroughly, but meanwhile permit us to say that no one can make a mistake in investing in such profitable summer reading. If we did not already have one we should see that it was on our desk quickly.

THE Tom Thumb Camera is the latest excitement in our line. It has an arm A, and a catch B, and A strikes B and interferes with the screw C on the catch D which works upon the instantaneous drop, see? and a watermelon is not needed to hide it. It will go inside an apple or a tomato. Size of plate $2\frac{1}{4} \times 2\frac{1}{4}$.

THE Eclipse Album (patented) is the name given by Mr. FELIX REIFSCHNEIDER to an invention that will surely become a great favorite with photographers. It is so contrived that the leaves may be removed and the picture mounted and burnished (the one independent of all the others) and instantly replaced, so that when the leaves are all together the book is compact and solid and well bound. This is contrived by a system of joints or hinges through which a metal rod passes from end to end, each rod to be quickly removed, thus enabling a person to take out the leaf. Any single leaf can be taken from the album without disturbing its neighbors, so the changes of view or remounting may be made quickly and easily. No strings to tie, no leaves to warp. It is certainly the best thing we have seen in its particular line.

SAD NEWS FROM ITALY.—We regret to hear from his sister, that our old friend and contemporary Signor OTTAVIO BARATTI, is dead. We shall give fuller particulars in our next. We mourn his loss keenly.

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.

FOR SALE.

My old established gallery of 27 years in Chicago. Four years' lease. 40,000 negatives, all made within ten years. Eight D. and three A. Dallmeyer lenses. Largest and best equipped gallery in America. Two skylights. Exhibition gallery, printing, retouching, finishing, framing, and stock rooms, all occupying one floor 25 x 140 feet; reception room on floor below 28 x 30 feet, with office off entrance through high arches. Two 12-feet plate-glass circle showcases on counters. Two elegant large side showcases with drawers, pier mirror—all finished in mahogany, ebony, and gold. 65 specimens in pastel and crayon portraits in gold and bronze frames. All for $7000. $5000 cash, balance in monthly payments. Very cheap rent, only $1800 a year; this includes heating, water, and elevator service. Best location in Chicago. The price named not half its value. I never have made less than $4000 to $5000 a year net, and hire every dollar of the work done. A good photographer could save $1200 more than I have, and if he was lucky enough to have a wife to attend reception-room, could save $700 more, and live in the gallery, save house rent, and pay for the gallery off their salaries in four years.

This is a good chance for two photographers or man and wife. I employ six and seven persons all the time, and hire every dollar of the work done. The money I pay my operator and reception-room clerk would pay for the gallery in four years. The only reason for selling, am 60 years old next birthday; 38 years of successful business ought to satisfy the loftiest ambition. This offer is good for 30 days.

C. D. Mosher,
Art Gallery, 125 State St., Chicago.

For Sale or Exchange.—4 x 5 mahogany polished camera, all improvements. 3 Book-folding Double Holders. Rapid Rectilinear and Wide Angle Lenses. Newman Shutter graded from one second to one one-hundreth of a second. Tripod and Carrying Case. Want in exchange, Columbia Safety Bicycle or Cash.

Address, H. L. R.,
1125 Chestnut St., Philadelphia.

Detective Cameras.—Wanted, a "Schmidt" model (old make) Anthony's Detective Camera. Write price and condition to Robert Blum,
"The Benedick," Washington Square,
New York City.

Wanted.—A first-class operator and retoucher for the Summer. Good Salary. Address,
"Photo Artist,"
Cresson Springs, Pa.



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A. Wittemann,
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Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

For Sale.—Photograph gallery in a large city, doing a good business; rare chance for a good man; write for particulars and price.
Address, Burrell,
357 Westminster St., Providence, R. I.

Try Richardson's Glacé Lubricator.

See what wide-awake photographers are doing with the Violet Lightning Flash Compound:

Wonderful.—If you are too busy to sit for your picture during the day, go to the gallery in the evening, and have your picture made by the Flash Light. I guarantee satisfaction on Flash Light Pictures, or money refunded. Have your pictures made in the new boat.

W. H. Reynolds, *Photographer.*

"I am having great success with the Compound, and can make as good a picture by night as in the day time." W. H. R.

Buchanan, Bromley & Co., "Flash" makers, 1030 Arch Street, Phila.

ALBEE'S BACKGROUNDS TESTIMONIAL.

The background is very satisfactory. The clouds are very soft and airy. Shall probably have to have another ground before long, and perhaps two—one interior and one exterior. I wish you all success, and will do all I can to help you.

A. C. Austin, Nashua, N. H.

I have received your Burnett and prize it very highly, as it is a great assistant in the studio. I consider it invaluable to any Photographer or Artist.

F. W. Guerin, St. Louis, Mo.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

An elegant Display Cabinet for all sizes of photographs is being made by Smith & Pattison, 261 and 263 State Street, Chicago. A nice piece of well-finished and carved cherry, on castors. The photographs are tacked on the leaves or doors, of which there are five on each side, each being 28 x 40 inches in size. It has been sold to several leading Chicago photographers, who say they could not keep house without it. Send to the manufacturers for full description.

Professor W. K. Burton's Book on Photo-mechanical Printing Processes continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated, and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.—*Anthony's Bulletin.*

It is a pleasure to know that all of the best photographers in the city of Philadelphia are using Three Kings Albumen Paper. Price per dozen, 90 cents; per ream, $32.00; second choice, per ream, $24.00.

Buchanan, Bromley & Co., Importers,
Philadelphia.

For Sale.—As they are, six direct solar cameras, 14 inch condensers; will print up to 25 x 30. Lately in use at Albert Moore's. Also a library of photographic books. Cheap for cash. Address,

W. L. Shoemaker, Phœnixville, Pa.

STAMP PORTRAITS!

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Perforated and Gummed like postage stamps, and the only Stamp Portraits covered by Letters Patent. Issued July 12, 1887.

Having purchased from Kuhn Bros., the Letters Patent covering the manufacture of *Stamp Portraits*, also on the *Apparatus for making the same*, we hereby notifiy and caution all infringers that legal action will be taken to protect said letters patent.

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Taken from any Cabinet, or Card, or Small Photograph.

Made in sheets, perforated and gummed, four times larger than the "Stamp Photo." No less than two dozen from one subject made.

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Territorial Rights and Complete Outfits for sale.

The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckian would say, good whisky. Send the book on Photo-Engraving.

FRANK THOMAS,
Columbia, Mo.

To Photographic Merchants.

New York, September 1, 1887.

Gentlemen: We have now opened a *New York Depot* for the benefit of our Eastern patrons. From this depot orders will be delivered to any New York Freight, Express, or Steamboat office. Address M. A. Seed Dry Plate Co., No. 2 Bond St., New York. A. R. Huiskamp, Manager.

EDWARD L. WILSON, the well-known and popular Photo-Book Publisher, of No. 853 Broadway, New York, has just issued a very valuable and important work on Photo-engraving, Photo-etching, and Photo-lithography. The publisher and author claims the book treats "mainly upon an entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them." It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Mr. Wilson's own contributions and translations from the French and German, make the new book very thorough and practical, and also make the whole of the processes very plain. The book is 6¼ x 8¼ inches, illustrated, 180 pages, and cloth bound; price $3, post paid, and is divided into the following departments;

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed.

Since the demand for photo-engravings from newspapers, magazines, etc., is each day growing greater and more imperative, it behooves those who desire to become skilled in this fascinating process to secure a copy of the new work.—*Lithographer and Printer.*

Try Richardson's Glacé Lubricator.

VIOLET LIGHTNING FLASH.—(Brutum Fulmen.) This compound is made by a new formula, and produces the most powerful actinic light yet discovered. It contains neither acid, chlorate of potash, nor animal charcoal. It oxygenizes more rapidly than any flash compound heretofore offered, and may be used on card-board or glass with safety.

Twenty grains is quantum sufficit for an ordinary flash (instead of forty to sixty grains, as stated on our copyrighted directions). According to subject, distance, quality of lens and rapidity of plates used, vary the above quantity. A twenty-grain measuring-cup is sent with every bottle. Handle with care.

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1	Imperial photo press, R. Hoe make, in good order	$25 00
1	7 x 10 Press, good order	10 00
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1	New 11 x 14 Optical Co.'s View Box revolving back, Barnett holder	50 00
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1	14 x 17 View Camera, with Plate Holder	8 00
1	20 x 24 View Camera, with Plate Holder	12 00

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841 Broadway, N. Y.

The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckian would say, good whisky. Send the book on Photo-Engraving.

FRANK THOMAS,
Columbia, Mo.

$300 will buy my branch gallery. No opposition. Established trade. Poor health the reason for selling. W. H. DUNWICK,
Pulaski, N. Y.

1886.—February 6th wanted. Copies of the PHILADELPHIA PHOTOGRAPHER for Feb. 6, 1886 wanted. A copy of 1888 *Mosaics* will be given for each such number sent to this office. EDWARD L. WILSON.

THE PLATINOTYPE for Amateurs; simple to work, and the results artistic and beautiful. Send ten cents for sample landscape and book of instructions. WILLIS & CLEMENTS,
1112 Hunter St., Philadelphia.

A SECOND EDITION

JUST RECEIVED FROM ENGLAND,

PROF. W. K. BURTON'S NEW BOOK,

Practical Guide to Photographic and Photo-mechanical Printing Processes.

Price, $1.00.

MARION & Co., Publishers, London.

The well-known author says, "The object of this work is to give practical instructions in the working of all processes which are in actual everyday use at this date."

The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

Copies mailed on receipt of price.

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CARBUTT'S ECLIPSE PLATES.

A word or two as to the "Eclipse" Plate: with the "Eclipse" Sen. 27, I have made better work than ever before. One charm is their exceeding brilliancy and great rapidity, giving full detail with Prosch rapid shutter, diaphragm *f* 24. The negative is very like the best class of old wet-plate in its quick printing characteristics. CHAS. WAGER HULL.

NEW YORK, July 9, 1888.

Photo-Engraving, Photo-Etching, and Photo-Lithography.
Just ready. Price $3, post-paid.
See advertisement.

FOR SALE.—One photograph wagon, which was formerly used as a dark-room. Has enclosed steps in back.

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BUY BURNET.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY.—From the title of this book a casual reader would suppose that it was the experiences of a photographer for a quarter of a century; but they would be greatly mistaken, as its second title, "A Collection of Hints on Practical Photography, which forms a Complete Text-Book of the Art," explains what it really is. Mr. Edward L. Wilson, the author and compiler, is well known as a thoroughly practical writer on photography, and his *Quarter of a Century* is a valuable addition to the many other books on the subject he has written and edited. It will be an authoritative encyclopædia for many years to come; we have searched for omissions, but find it a very perfect treatise on the art.—*Trübner's American, European and Oriental Literary Record* (*London, Eng.*).

BUY BURNET.

ART OF MAKING PORTRAITS IN CRAYON ON SOLAR ENLARGEMENTS.

BY E. LONG.

SECOND EDITION.—NOW READY.

The *Photo Times* says: "The second edition, rewritten and enlarged, of this popular handbook for crayon artists, has recently been issued. The first edition of this book being small and published rather as an experiment, many important points on the subject had to be treated briefly. But that edition meeting with such a warm reception and selling so rapidly, the author resolved to enlarge the second edition and give his readers the benefit of the knowledge which he had since gained of new materials and a fuller description of his methods of handling them. **The little work treats solely of bust and vignette portraits, and its aim is to assist young artists who are struggling alone beyond the reach of competent teachers.** After an introductory confidential chat with the students, we have chapters on the Solar Print, Crayon Materials and How to Prepare them; the Crayon Print, Interlining and Retouching; Hair and Beard; Drapery; Background; and Concluding Remarks." It is the best.

Price, in paper cover, fifty cents.

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HANCE'S Ground Glass Substitute makes a splendid backing for window transparencies and glass stereographs. It softens the light wherever used.

SMITH & PATTISON, 261 and 263 State Street, Chicago, are manufacturing a line of Accessories that are "going off like hot cakes." The Gehrig Pedestal Combination, Place's Garden-Wall Combination, Grand Stairway Combination, Papier Maché Venice Chair, etc., all wonderfully low priced. Send to the manufacturers for descriptions.

THE PLATINOTYPE for Photographers, Solar Printers, and all Copyists. Platinotypes are permanent, and a license to work the process costs very little. Send ten cents for sample portrait and book of instructions.

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SITUATIONS WANTED.

By a first-class operator, understanding the business in all its branches. Have been operating twenty-six years. Best New York and Baltimore reference. H. Preston Brooks, 201 6th Avenue, N. Y.

By a thoroughly competent printer. Always connected with first-class galleries. D. C. Batchelder, 9 Bridge Ave., Troy, N. Y.

By a first-class operator and retoucher thoroughly posted in all departments. Best reference. Address, L. F. Donnier, Photographer, Worcester, Mass.

By a first-class retoucher; will also assist in printing. Chas. W. Price, 111 E. 4th Street, Lexington, Ky.

As operator and retoucher. P. Van Tine, 33 Chapel St., Trenton, N. J.

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"SUCCESS" SENSITIZED PAPER PRESERVATIVE.

A Great Boon to Photographers. Patent applied for.
Simple, Reliable, Cheap.



This cut illustrates the apparatus that will do the work successfully.

The SUCCESS PRESERVATIVE has made a grand record the past year. The following testimonials must convince the most skeptical of its merits:

From FALK, 949 and 951 Broadway, New York City.

Your Preservative is voted a big success here, where for the past few months my printers have put it to a severe test and found it to be all you claim for it. Next to the dry plate it bids fair to rank as the greatest economizer of labor and material lately introduced to the fraternity, and if in the future it proves as satisfactory, its praises will know no bounds.

From J. H. KENT, 343, 345 and 347 State St., Rochester, N. Y.

The sensitized paper preservative when used in the tin apparatus is a great success. The paper keeps in perfect condition for two or three weeks. Instead of silvering paper every morning as heretofore, we now silver large quantities at a time and use it as required, thereby saving great loss, by paper spoiling before we were able to print it. You certainly are entitled to the thanks of the fraternity for this valuable discovery.

From J. F. RYDER, 239 and 243 Superior St., Cleveland, Ohio.

Your paper presesvative is a valuable means of accomplishing the desirable ends of paper saving, time saving and money saving. In my own practice I find it to be all you claim for it.

Price, 35 Cents per Can, or $2.00 per Package of 6 Cans.
" 20 " " Box, small size, for Amateur's Outfit.

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C. H. CODMAN & CO., B. FRENCH & CO., Boston, Mass.
GEORGE MURPHY, New York, N. Y.
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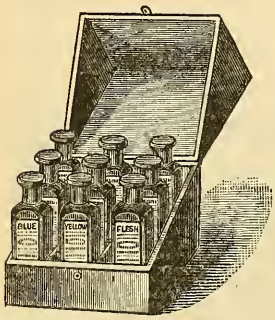
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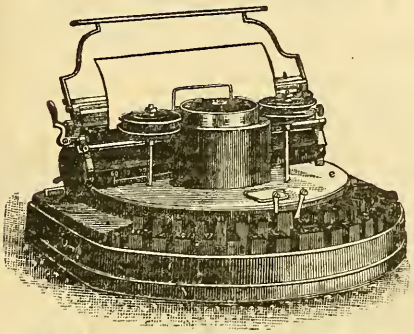
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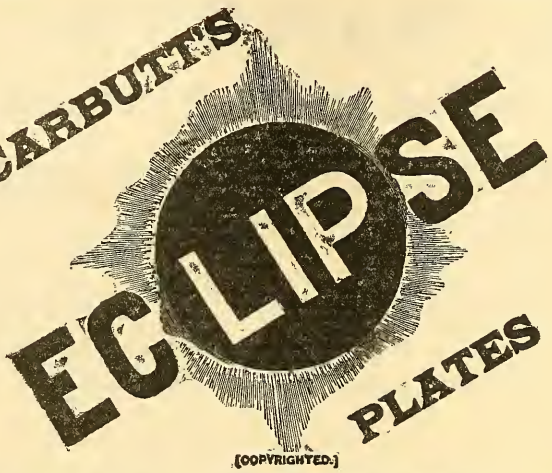
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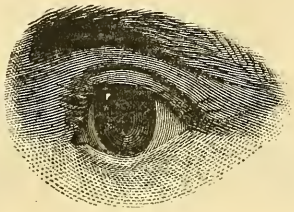
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It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

A good index, fairly well cross-referenced, makes the book useful for quick occasional reference.—*Amer. Architect and Building News.*

A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better.—DEAN WRIGHT, in the April *Boston Academy*.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text book of the Art. By Edward L. Wilson. Published by the Author. New York, 1887. Price $4. Pp. 528.

In making the above claim that this work is a complete text book of the art of photography, the author has not overstepped the mark, for we have seen nothing to compare with it in clearness and attention to details and manipulations. The author's easy style is already well known to those interested in the subject, and goes a long distance toward making the "Quarter Century" an interesting volume, entirely independent of its large store of information. After an outline history of the subject, the theory of photography is treated of; then follow the subjects of light, the camera and lenses, the diaphragm, artistic principles, indoor and outdoor work, chemicals needed, negative making, printing, photo-engraving, slide making, etc., etc., with a host of details worked in under the proper headings. Isochromatic photography is treated of in a separate chapter, and its special value in certain classes of work noted. The more prominent features of the work are the chapters on lenses, art principles and the making of paper and film negatives. The treatment of this last subject will be found of especial service to the travelling amateur, who is often deterred from adopting the use of flexible negatives simply because he can find little reliable information concerning their peculiarities. We know of several cases of amateur enthusiasts in the art who have tried the "films," and finally returned to the old stand-by glass plates, because of difficulty in handling the later process. By the light of such information as Mr. Wilson has supplied, this difficulty largely disappears, and the process is simplified by giving a detailed understanding of it. The arrangement of the book is exceptional in one respect that greatly increases its value for general work. The main text is supplemented by foot notes in smaller type, comprising quotations from all our leading writers on the subject, and in many cases containing original methods that have not yet become generally known to photographers. This collection Mr. Wilson has been in an excellent position to make, as editor of the *Philadelphia Photographer*, and the readers of the "Quarter Century" will be more than repaid by a close comparison of the methods presented.—*Iron*.

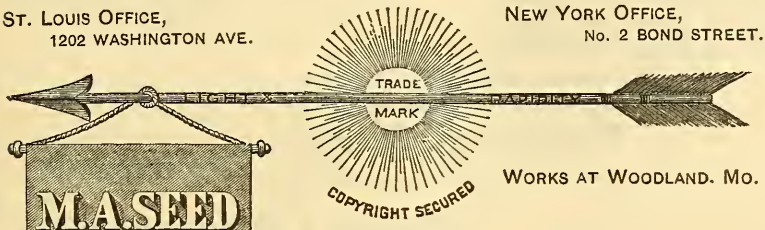
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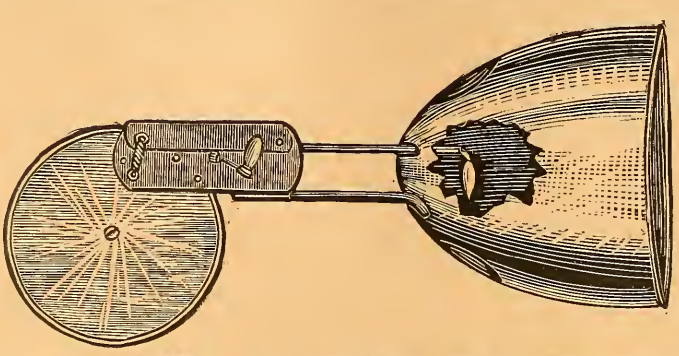
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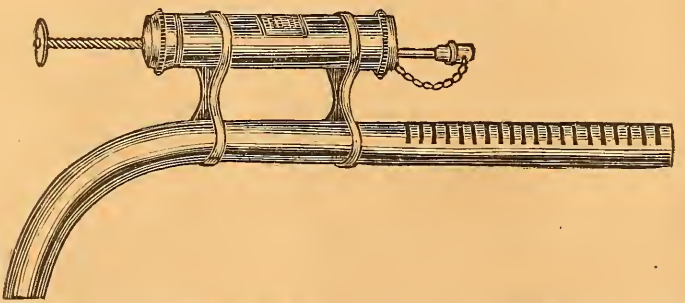
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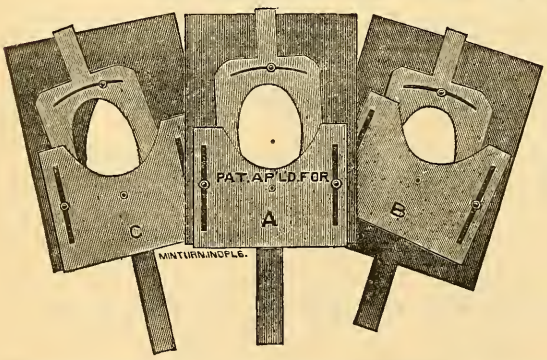
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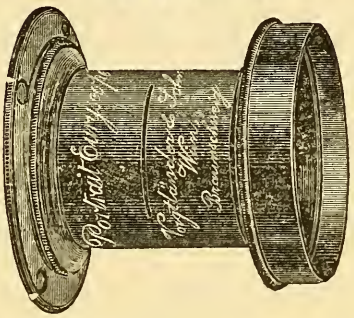
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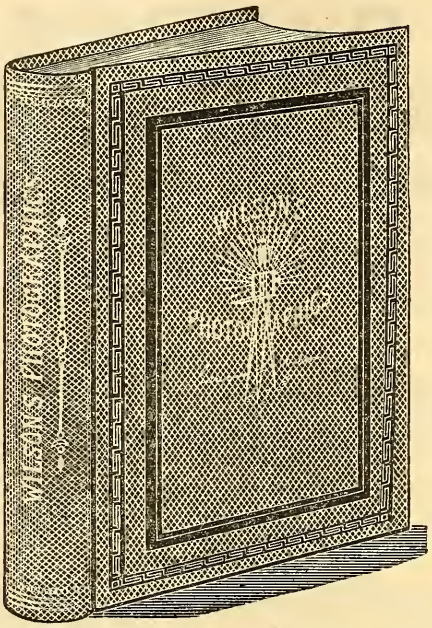
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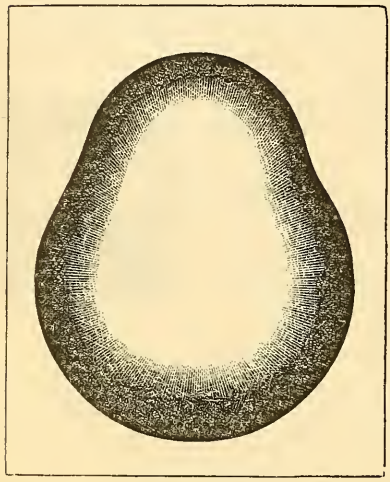
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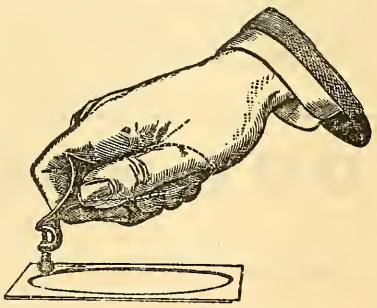
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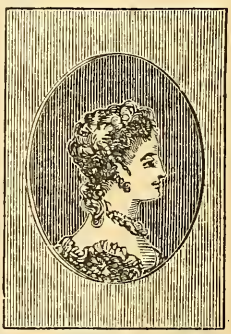
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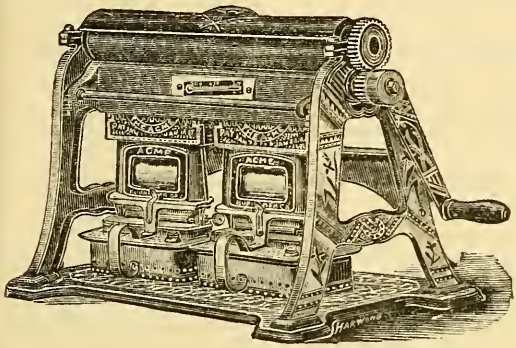
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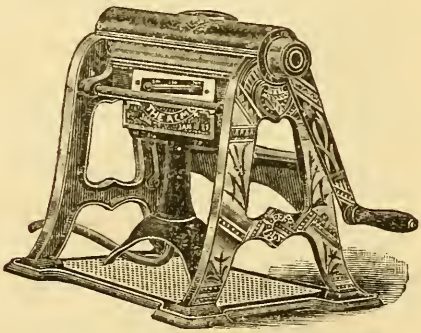
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THE MINNEAPOLIS CONVENTION AND EXHIBITION.

THE gathering and exhibition at Minneapolis were smaller than any known in the history of the Association. Scarcely four hundred members paid dues in person at the Treasurer's office, and hardly one-half that number were seen at any time in a meeting of the Convention. There was but little enthusiasm; and not very much work of importance was done. The exhibition made by the dealers was very meagre, and that of the photographers was far short of what the attendants upon former conventions are accustomed to seeing.

There were various speculations as to the causes of this great falling off. Some reasoned that the interest in the P. A. of A. had died out; others declared that the officers had not done the usual amount of pushing and urging; the location was found fault with as being "too far away." This last theory was confuted by the resident photographers of Minneapolis, who declared that a person so disposed could reach Minneapolis from any part of the world, and that certainly one could start from Minneapolis and go to any part of the world. Again, others argued that two hundred more new members would have been added from the great Northwest, had the initiation fees and dues not been so exorbitant —unnecessarily so on account of the large surplus in the treasury.

Perhaps all of these causes may have had their effect, and in a measure influenced the interest; but the probability is that there would have been more enthusiasm and a greater showing, if the officers in authority had pushed the interests of the P. A. of A. in a businesslike manner.

Yet, withal, as our readers will notice from the report, which will be found further on, some useful work was done at the meetings and some fine examples of photography were exhibited. It also seemed true that because the exhibition was deficient, more real interest was taken in the proceedings. For example, when the locality for 1889 was balloted for, one hundred ballots were cast —48 for Washington and 52 for Boston.

This is, we think, unprecedented, as the ballots for location and officers have been made heretofore at slimly attended meetings.

When the election of officers took place there was a good attendance, to keep up which the doors were fastened until adjournment. Thus a fair interest was secured in the choice of location and in the election of officers—an unusual thing indeed. Much wisdom was shown in the treatment of the insurance projects, and, we are glad to say, they were defeated. The poor harmless constitution came in, as usual, for a measure of tampering, but as we at once left the room when such vandalism was started we cannot now report fully what was done.

As a whole, we believe the Convention was enjoyed more than some larger ones have been, and it was adjourned with a good hope for next year, at Boston. Up to going to press we have received no report of the proceedings from the secretary.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

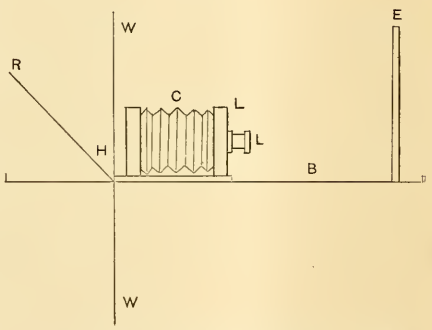
BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 420.)

Enlargements and Reductions.

As we have to mention enlargements in connection with bromide paper, it may be well just here to consider for a few moments the subject of enlargement and reduction. These results may be obtained with the aid of daylight by using a special camera made for the purpose consisting of two bellows of equal length, the lens being in the central frame and pointing toward the negative. The negative is placed in the end frame furthest from the operator and nearest to the source of illumination, and should have the film side pointing toward the lens. The sensitive plate in its holder is at the other end, occupying the place of the ground-glass after the operation of focussing has been completed. The camera is tilted toward the sky to avoid all extraneous objects. Northern exposure is far the best, for the light is steadiest there, and the front or back bellows is pulled out or pushed in toward the lens accordingly whether you wish to enlarge or reduce. Stops in the lens are not, as a rule, necessary unless to improve the marginal definition, and then use the largest one. The further from the lens the sensitive plate the larger the image, and vice versa. The distance (approximate) between the lens and the sensitive plate can be found by adding one to the number of times the negative is to be enlarged, and multiplying by the focal length of the lens. But as tables of distances required are found in most of the journals, and in the catalogues of the various dealers in photographic materials, and, especially as they would occupy more space than I have the conscience to ask of the editor, they will not be given here. You can also utilize your own camera by blocking out from the window all but the space required by the negative to be enlarged. Put the negative into the rebate slide of the ground-glass or in the ordinary holder, both slides and the septum, if any, being withdrawn, and insert the holder in its proper place, fix the camera close up to the hole left uncovered in the window, so as to entirely exclude all the light but that which comes through the negative, the lens being turned into the room. If you discover any particle of light straying into the room wrap your focussing cloth round the back of your camera. Outside of the window have a board with a sheet of white blotting-paper on it, hinged at an angle of forty-five degrees, to reflect the light through the negative. At the proper distance place a board or easel to hold the paper or plate to be enlarged. When looking through the uncovered space in the window through the camera, the lens being removed, the edges of the reflecting board must not be seen. The following diagram will show how these are arranged.

Fig. 1.



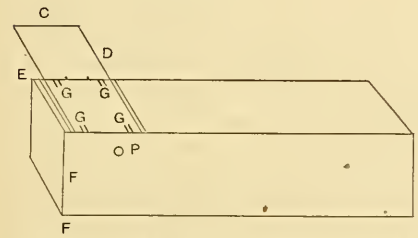
W W, window; H, uncovered space for negative; R, card or mirror as a reflector; C the camera; B, table or board upon which camera rests; E, easel for sensitive paper.

Or should your focussing screw of the camera be at the back, you can reverse your camera, pointing the lens toward the negative, the ground-glass being of course removed. The lens and negative must be enfolded by the focussing cloth to shut out all light, or you can make a light frame to pass over the negative, and a short sleeve of black cotton velvet fastened to it and fitting tight around the lens by the assistance of a rubber band.

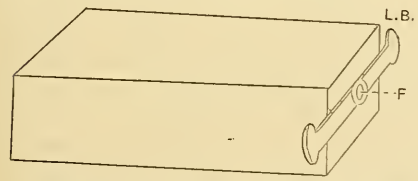
A very useful and inexpensive enlarging apparatus can be made by any one familiar with the saw and plane. It consists of two elongated boxes, one of which slides snugly partially over the other. The inside box for a 5 x 8 negative, or smaller, is 13½ inches

long, 8½ inches wide, and 6¾ deep, of light well-dried stuff ⅜ thick when dressed. The outside box is 8½ inches long, 9½ inches wide, 9¼ deep, One end of the inside box is fastened to a frame which in turn is fastened over an uncovered pane in the window. Close to this frame there is a door which lifts up, 3⅜ inches wide, disclosing two grooves in the box. These grooves are 3⅛ inches apart. The groove nearest the window is to hold the ground-glass, and the other the negative to be enlarged. Remember the film side of the negative must always be toward the lens. The outside box is closed at one end by a board slightly thicker than the box in the exact centre of which there is a sliding lens board, working horizontally; by either drawing out or pressing in of the outside box over the inner one the proper focus can be obtained. The inside of both these boxes and sliding lens board must be painted a dead black.

Fig. 2.



Inside box.—F, frame attached to window; G G G G, grooves for ground-glass and negative; D, door for insertion of ground glass and negative; C, catch or door; P, pin to hold catch.



Outside box.—F, flange for lens; L B, lens board slides in rabbit inserted in front of the box.

Enlarging can also be done by artificial light by aid of a magic lantern, or by attaching the camera to a box large enough to hold a good-sized lamp, in which case you will need one or two glass condensers. The box, if of wood, should be lined with tin, with a good reflector behind the lamp.

It is sometimes difficult to obtain a sharp outline of the enlarged picture upon the easel. But this difficulty vanishes by the use of a simple device: Take a negative that you do not care for, not too dense, and with a sharp knife cut the film about two-thirds across with three strokes forming parts of two triangles, thus



Cut down to the glass and leave no ragged edges in the cut. You wil be surprised how clear and sharp, and with but little trouble or loss of time, you can get these lines upon the cardboard on the easel. When you are satisfied that they are perfectly sharp remove this guide negative and insert the one you wish to enlarge. It is well to use the same lens with which the negative was made for enlarging. Though this does not matter very materially. In the special enlarging camera a lens generally is furnished for that particular camera.

Enlarging on Bromide Paper.

The paper is fastened upon the board or easel after the negative guide has given you a sharp picture upon a sheet of white blotting-paper, which is then removed or not as you feel inclined. Remember that your hands must be perfectly clean and dry, or you will leave marks on the paper that will be as enduring as the print itself. If enlarging by artificial light the negative should be thin and clean, but if by daylight it should be of normal density. The same directions of varnishing the back of a thin negative with a tinted varnish holds good here as in contact printing. If you should wish to reduce the contrasts tint the back with blue. The proper amount of exposure to be given can only be determined by experiment. I would advise you not to expose a whole sheet of the paper, but place

on the easel a strip of paper, say about two inches wide, where the most prominent part of the picture is projected. Then expose, say, for about five seconds, and develop in the usual way. By this means you will be able to judge whether you have over or underexposed, and can correct any mistake that you may have made as to exposure, and with but little expense. The exposed prints are to be developed in the usual way for bromide paper. The whole procedure is an interesting one generally, giving very pleasing results, and especially when portraits are enlarged, for they can afterward be handled by various means to correct or remedy any apparent defects.

The Platinotype Process.

In this, as well as in some European countries, this is a patented process, but a license to use it can be obtained for a mere song from the patentees, but the restrictions, requiring one to buy the material from them, seems to be rather drawing the line pretty close. Though capable of producing the most beautiful and exquisite prints, the amateur must not think that it is a process that can be played with, but he must be prepared to expend the utmost care and patience in conducting the various operations. "If a thing is worth doing, it is worth doing well," is well illustrated in this—for when done well, the reward is great. The chief charms of the process are its simplicity, permanency, and the particularly artistic color and general effect of the results. Its popularity seems to increase rapidly and, I think, desirably, so far as the permanent nature of the print must be acknowledged on all hands. I think that I cannot urge upon the young amateur too strongly to perfect himself in this process—feeling assured that he will not be disappointed. Dampness is the great enemy of this process—everything used during printing or storing the sensitive paper must be perfectly dry, and great care must be taken to preserve the paper from its disastrous effects. The paper must be kept in tin cans containing a supply of calcium chloride, and when printing the pads must be kept dry, or a piece of rubber cloth used to cover the pads. The paper, which is before exposure of a grayish-yellow color, is placed in the printing-frame in the usual manner, and is then exposed to daylight. The paper is about two or three times as rapid as albumenized paper—it may be examined from time to time during printing in a yellow or very weak white light. When those parts affected by light change to a pale grayish-brown or dull orange color under the deepest shadows of the negative, the paper may be considered as fully printed, and then should be removed to a calcium tube until a number are ready for development. Development may be conducted in the dark-room or by gaslight. Negatives having decided contrasts give the most vigorous prints, for, as a rule, the contrasts given by the platinotype are somewhat less than those obtained on silvered paper.

The paper to be sensitive is coated with a mixture of chloro-platinite of potassium and ferric oxalate. The ferric oxalate is sensitive to light, being by its action changed into ferrous oxalate. Exposing the paper, coated as described, in the printing frame, produces an image of ferrous oxalate of a faint grayish-orange color, lemon-yellow being the color of the unchanged salt. Ferrous oxalate when in solution has the power of reducing the chloro-platinite of potassium to metallic platinum. All then that is necessary is to dissolve the ferrous oxalate in some liquid capable of dissolving it, when the solution will reduce the chloro-platinite to the metallic state, as metallic platinum. The liquid recommended by the patentees is a solution of oxalate of potash rendered slightly acid, and it is then only necessary to float the paper (having on its surface chloro-platinite and an image in ferrous oxalate), on a solution of oxalate of potash, when an image in finely divided metallic platinum results. The action of this solution is rendered more energetic by heating it. After development, the remaining iron salts are to be dissolved from the surface of the paper by any of the several acids.

Development.—The developer is an aqueous solution of oxalate of potash, which is generally a saturated one. The patentees and others recommend that such exposures

should be given that the development may be performed at a temperture of about 180° F., but any temperature between 100° F. and the boiling-point may be used. The lower the temperature, the longer the exposure required. Low temperatures and long exposures seem to give purer whites, and you certainly have more control over the results.

The developer must be contained in an agate-ware dish and heated over a spirit lamp. The print is laid face downward on the surface of the solution. Should the temperature of the developer be high the result is almost instantaneous, but if low fifteen or twenty seconds may be required. This time will enable you to examine the print from time to time, and to check the development before it has gone too far. The developer can be used many times.

Fixing and washing the prints. It is necessary to get rid of the iron salts which, if they remained, would soon cause a dirty yellowish discoloration. To do this, a clearing solution consisting of a mixture of 1 part of hydrochloric acid with 60 parts of water is used. Three baths should be made up of this mixture. Pass the print from the developer directly into No. 1, or first of these baths, where it is to remain five minutes, then into No. 2 for the same space of time, and then into No. 3. After leaving No. 3 it is then washed for a few minutes in running water, and is then finished and can be hung up to dry or placed on blotting paper—they dry without curling. As soon as the first bath becomes deeply tinted with yellow, or in any case when the last bath shows any trace of yellowishness No. 1 must be thrown away, and No. 2 substituted for it, No. 3 for No. 2, and a fresh No. 3 should be made.

During the past year in England it was announced, that old and generally considered worthless platinum paper could be developed with a cold solution of carbonate of soda, though the formula for the same was not given at the time. General Joseph B. Brown, U. S. A., a veteran amateur, after many experiments succeeded in developing from what would be considered positively ruined paper with the following solution, clear, sharp, black prints, with perfectly pure whites. His mode of procedure is as follows: Exposing preferably in the sunlight about one-third less time than necessary for silver prints, and then pass the prints into a bath (held in a shallow dish) composed of a saturated solution of carbonate of soda (washing soda). Taking two ounces of this solution diluted with an equal quantity of water, to which had been added two drachms of a saturated solution of alum. The precipitate or cloudiness, which results from this addition, will do no harm provided it be equally diffused by stirring or shaking. The liquid should have the depth of about one-half inch in the pan. Have also the usual acid solutions hydrochloric or citric prepared. Then in a moderate light take up the exposed paper by the opposite diagonal corners slightly turned back, and lay it down upon the developer touching the central portion first. *Do not let go the corners*, but leave the whole surface in contact with the solution for not longer than ten or fifteen minutes, then immediately raise it without sliding or draining it, taking care that none of the solution wets the back of the paper, which might occasion unequal development. Hold the print before you horizontally, and watch the development which will proceed very rapidly. The fluid on the paper should be allowed to run equally over the whole surface of the paper by inclining the print still held by the corners, or if any part lags let it run toward that point. The whole procedure will occupy but a few seconds, and when the proper depth of color is obtained immerse the print in one of the acid baths where it is to remain for ten minutes, remove to the second bath for a few minutes, then wash in clear water, but do not put the print into the water until the whites appear pure.

I would not recommend that you sensitize your paper at the first, but procure it already sensitized, for much care and patience has to be exercised in the operation.

Platinotypes on Linen and other Fabrics.

Platinotype prints may be produced on almost any of the white fabrics which will stand the treatment with weak acids, and the resulting effects produced are oftentimes remarkably striking. I have seen a dinner

table beautifully adorned with napkins, each showing some choice bits of landscape, marine views, etc., produced by this process. A hint to our lady amateurs which doubtless they will quickly act on.

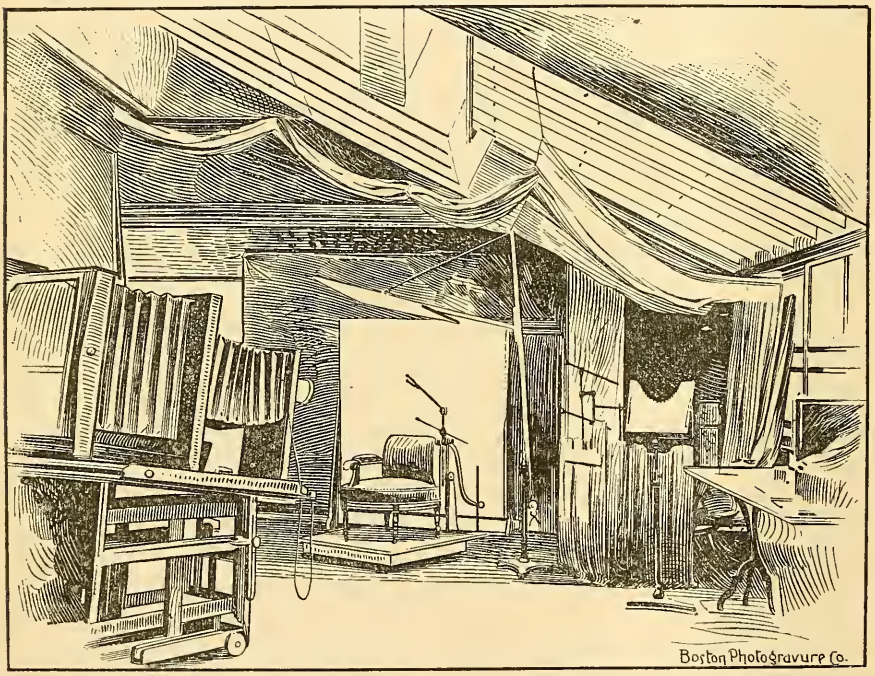
INSIDE SWINGING BLINDS FOR THE SKYLIGHT.

BY FRANK ROBBINS.

Your recent article on "Awnings for the Skylight" invites my pen to describe a much better and cheaper way of shutting out the direct rays of old Sol from the operating-room.

I used the outside awning eight years ago. It was a rather costly experiment, and the quality of the light was bad, from the fact of the point of diffusion being too far away from the sitter. My present system is very effectual.

Provide a strip of muslin for each sash bar in your skylight, counting the two outer bars. Each strip should be two inches wider than the panes of glass in the skylight, and as long as the sash bars. Nail a thin strip of wood to one edge of each strip of muslin, and tack the other edge of the muslin to each sash bar. You now have the muslin blinds hanging straight down with a strip of wood on the lower edge of each. In this position they will keep out all sunlight in early morning and late afternoon, while in cloudy weather they obstruct very little light. Now cut the wood strips and muslin into two or three sections according to the length of your sash; stitch a piece of tape across the lower edge of the wood strips in the centre of each section, and drive a tack through the tape into the wood strip. Next pass each end of the tape through a screweye in each side of the skylight and attach cords long enough to reach a convenient point for handling. By pulling either cord the screens swing enough to cut out direct sunlight at any hour of the day.



Many operators think they have not room to swing such a system of blinds. Yet if they once put them up they will be surprised with the convenience of stopping out sunshine from any part of the room they choose at any time of day.

I also have a set of slate-color silica curtains running on wires just below the swinging blinds.

If the skylight is very low the lower section of swinging blinds can be omitted altogether.

Put up the inside blinds first. The exercise of a little ingenuity will show you how to swing them properly, and arrange any other curtain needful.

I mail a photograph of my operating-room, showing the inside blinds with slate-color curtains under them. Their use gives perfect control of the light. My skylight is so low that I have only half of it covered with the swinging blinds.

A WORD ABOUT DRY PLATES.

BY O. S. MORTON.

HAVING briefly referred to what may appropriately be termed the "circle of confusion," in photographic appliances and methods, it may not be amiss to add a few words in reference to dry plates, by way of emphasizing the need for care in their preparation and system in their classification. In the purchase of perhaps nine hundred and ninety-nine articles out of a thousand, the buyer has the privilege of using sight, hearing, or touch in making a selection. Not so with dry plates. They must be bought on faith. Should not this fact put the plate-makers "on their honor," so to express it?

To the west of Richmond, in the vicinity of what is known as the "New Pump-house," are some nice "bits" of scenery, as well as some fine subjects of more extended range. Wishing to secure these, I filled my holders, putting in one-half of them a certain make of plates, of the qualities of which experience had given me a high opinion. Having to be at my place of business by nine o'clock, I had to make an early start, and took the first car leaving the city that morning. When I came to a subject that I particularly wanted, I could use the special plate referred to with the feeling that I could rely upon its excellent performance.

The excursion was some miles in extent, and when completed I had to hurry down town without taking in the breakfast table en route, my good wife sending a messenger more than a mile with something to break my fast.

I developed the exposures only to find that my "brag" make of plates had deceived me, two or three of them showing an ugly semi-circular streak over a portion of the plate, and so far as they were concerned, time, travel, and trouble were thrown away almost completely.

Some months since I received a request from a gentleman residing in a distant city, to make a few exposures of certain subjects, at the same time asking me to use the same make of plate as the one above referred to. I procured another batch of them, and, although for some time past I had been unwell, yet wishing to comply with the request and my promise, I made another early start, this time in another direction. Now I presume my friend wanted that picture, and I wanted to get it. No effort had been spared and by rights we were entitled to it. But we did not get it. The negative came out all right, with nice density and detail around the edges, but the middle of the plate, or rather nearly all of it to within about an inch of the edge, seemed to have only about half the thickness of emulsion with the rest and was a perfect failure.

Both tramps will have to be repeated if the subjects are to be obtained.

From the foregoing it will be seen (and perhaps every reader of this can match the experience with his own) that the plate-makers can, by neglect or otherwise, make heavy drafts upon the time, muscles, and good nature of their patrons; and may not the request be made, without giving offence, that they will put into their work not only the best materials and the greatest care, but also another "ingredient" which will insure all the rest, and which friend Pray would call "bromide of conscience."

Then as to the numbering of the plates, can't we have a little more system? Not long since I asked a dealer if he had any Cramer 15's. He replied in the negative, but added that he had some Eagle 25's, which were about equal to everybody else's 20's. Now why cannot some sensitometer

be agreed upon, and all plates numbered with reference to this standard?

What a convenience it would be to have thoroughly reliable plates, a standard sensitometer, a standard "ounce" and a standard screw, so that the same flange would fit different makes of lenses, and enable one to use any objective he might fancy, just as by adopting the same gauge the different railroads can be traversed over by the same car. And if these things are desirable, why not adopt them?

RICHMOND, VA.

"TO BE HAD FOR THE ASKING;" TOO CHEAP.

BY AN "ARAB."

THE PHILADELPHIA PHOTOGRAPHER is among my list of "personals." Owing to the cares of business, with my children and employés, some of the various journals to which I am a subscriber are as much their property as my own; but THE PHILADELPHIA PHOTOGRAPHER goes upon my desk, and is not opened or moved until I want it. So much for its value. And as a close reader for years I have often been asking myself why people need to blunder around, when carefully written and edited articles were so cheap—five dollars a year. And so I have ventured to indite some of my own ideas as a sort of sympathetic wail with "Wanted A Remedy," p. 360, June 16th. It seems to me a remedy can be had, but it is quite too cheap.

When I decided to venture on an occasional hour's sport in photography for the sake of learning something of it, I found the same trouble that the writer of the article referred to cites, but it seems we (he and I) had a different way of solving the question. I often gave heed to the value of the authority of whom I asked advice, and if I found a man who would answer my questions, and who knew his business, I did not attempt to "tie to" more than six or eight at once, for it is an old maxim that in a multitude of counsellors confusion comes. It was also a maxim of mine not to adopt a part of one and a part of another, for in such mystery came curious results, and my friend O. S. M. seems to imply that quite a confusion exists. He will pardon me, no doubt, if I suppose his remedy can be had right at home, his home, wherever it is. Follow some one lead, and don't break it. I have been reading THE PHILADELPHIA PHOTOGRAPHER for seven years. Pyro in solution was discussed by Professor Henry J. Newton, in 1884; Mr. Pray, in 1885, put it on record that pyro solution a few weeks old required *five grains* to do what two grains were supposed to do. See THE PHILADELPHIA PHOTOGRAPHER, June or July, 1885; and June 16, 1888, p. 371, in the most entertaining article by Dr. Janeway, U. S. A. Read Professor Newton's developer, which Mr. Pray has so often quoted, always citing Professor Henry J. Newton's authorship. Then read on same pages "Carbutt's No. 1," and read with care the last clause: "This developer I think," etc., down to "it must of necessity become weaker and weaker the longer it is used." Up to this point Dr. Janeway is remarking on different developers. Now he writes from his chemical knowledge: "The sulphite of soda used principally to preserve the pyro is not a stable salt by any means, and the addition of sulphuric acid changes the salt and prevents what you wish to accomplish. In my opinion the vegetable acids give the best results, citric acid or preferably oxalic acid (this being a strong poison care should be exercised in using it, and especially should it be properly labeled) has lately been advocated by Mr. Thomas Pray, Jr., *with good sound reasoning and strong sense* (italics are mine, the words Dr. Janeway's). In any case I would advise you to make up but a small quantity of the pyro solution at one time. Some good workers advocate the addition of the pyro just beginning development." Then the Doctor continues, on page 372, "by giving the best developer of the kind of which he knows, and No. 3, pyrogallic acid dry."

Now who is Dr. Janeway? One of the most modest of men, a surgeon in the United States Army, for some years in New York City, now in California; a well-educated man, very methodical, rather analytical in his reasoning, a careful observer, and a man whose opinion cannot be bought for any lens or batch of dry plates. A capable man,

one who is not afraid to give credit. He says of Professor H. J. Newton's developer "its distinguished author." Professor Newton is one of the best chemists in any country, a rich man, and as familiar with photographic chemistry as any man in or out of the United States. I am willing to follow "his lead."

As to lenses allow me to remark if a snap picture can be made at 5 P.M. with the "smallest stop" and microscopic definition, etc., I am thinking Ross, Dallmeyer, and the opticians who years ago joined the silent majority have missed the vastness of progress. I do not question the statement, but my own experience with the best lenses in the world—and I have over half of a dozen—fails me absolutely and fully, and it is just such wild departures from facts of my own practice that make me hesitate. The lines of confusion in a lens described in THE PHILADELPHIA PHOTOGRAPHER, No. 323, will convey the fact that a good lens will cover from fifteen to sixty feet where much will be cleanly cut; and on the pages immediately following "Wanted—A Remedy" will be found some truth as to snap-shutter stories. Custom does not distort facts, but usage frequently establishes mischievous customs. It does not, however, make wrong right, and if my friends will choose, as has been so frequently suggested by one of the writers whom he instances, "one line of work, one plate, and one developer," he will find the remedy "with any good lens." Then, when experience has taught the facts, add to your stock of experience by repeating the process upon any other plate, developer, stop, etc., and if results are not so uniform as before, "look in the glass."

We all need advice and sympathy, but we do sometimes repel it by our own negative use of knowledge; at least that is the writer's experience, and he has had plenty of it in the last ten years "toting a box," and following preservatives for pyro, figuring out $\frac{f}{4}$, $\frac{f}{32}$, and in getting mosquitoes on the wing with snap shutters and pinhole stops at dusk in February, and in coming to his senses by reading and following the writers in THE PHILADELPHIA PHOTOGRAPHER, and profiting thereby.

[*Translated for the Philadelphia Photographer.*]

A NEW METHOD OF PRODUCING BROMIDE GELATINE PLATES WITH FINE GRAIN.

BY O. LOHSE.

DURING a number of photographic experiments, I ascertained the not uninteresting fact that a considerable quantity of bromide of silver can be completely dissolved in gelatine, and in such a way that no emulsion is formed, but only an opalescent liquid, which appears reddish by transmitted light, and in it, by the aid of the microscope, no grains of bromide can be detected. If such a solution is poured on gelatine plates they will appear as transparent as glass, and a very thin picture can be produced on them.

If to the mixture of the three ingredients, gelatine, silver, and bromine, ammonia is added, then the mass instantly forms an emulsion, which, under the microscope, permits the grain to be seen. The separation of the bromide also occurs if the plates prepared with transparent bromized gelatine are exposed in the wet condition to ammonia. In the latter case the grain formation is very even, and one has it in his power to produce plates with coarser or finer grain, according as the ammonia is allowed to work a longer or shorter time. With regard to these facts I have used the following process for the production of fine-grained bromide gelatine plates.

There must be formed two solutions, A and B.

A.—Water	50 c.c.m.
Gelatine	2 grs.
Nitrate of Silver . . .	1 gr.
B.—Water	50 c.c.m.
Gelatine	2 grs.
Bromide of Ammonium .	0.6 gr.

In A. the gelatine is thoroughly mixed with the water by using moderate heat, and the silver dissolved in a minimum of water, and first added when the gelatine has become as cool as possible; otherwise the properties of the mixture are changed.

A and B are mixed together while still warm, and, after thorough shaking, poured into 200 c.c.m. of alcohol, so as to remove the

nitrate of ammonia and the surplus bromide of ammonium. Of course, this method of washing, which I use for small quantities of emulsion on account of its simplicity, can be replaced by any other customary one. In the alcohol, the gelatine forms itself into a light spongy mass, and after some time in renewed water, it is softened, and finally, through heat, is reduced to a fluid. The volume is made up now to the original in the present case to 100 c.c.m., and the coating of the plates is begun. As soon as the gelatine layer is run upon a plate then the fuming with ammonia can take place in a drawer or box adapted for it, or exposed under a large glass bell; yet by this means the bromide is not separated into sufficiently fine grains. Therefore, I let the plates become perfectly dry first, and then bathe them a short time in aqueous alcohol (equal parts water and absolute alcohol), and bring them wet into the ammonia damping, whereby the milky appearance of the layer soon occurs. It is not advisable to let the ammonia work very long; a minute, at the most, is sufficient, after which the plate can be put away to dry. By longer working the grain is enlarged.

The sensitiveness of the plate is very small, nevertheless, this process can be used in all cases where light is not lacking, but a very fine grain is required, as in the production of small microscopic pictures, in the reproduction of negatives, etc. Besides, it is not conclusive that the sensitiveness cannot be increased. In the transparent state, the emulsion is, at all events, very insensitive, so that the preparation of the plates can take place with the plentiful illumination of the dark-room, which is a great relief. I have developed the plates with iron oxalate, yet any other developer suitable for gelatine plates can be used.

Neither the iodide nor chloride of silver can be used in the same way as the bromide, but it is probable that additions of one or the other haloids to the bromide gelatine will effect the desired advantage, and this I intend to experiment further upon.—*Photo. Archiv.*

THE PHILADELPHIA PHOTOGRAPHER for September will be unusually interesting

MYSTERIES AND MISERIES OF AMATEURS.

BY THOMAS PRAY, JR.,
OF BOSTON.

ROBBING nature is unprofitable.
The precise method is unimportant;
The result is as absolute as fate—
Fate quite uncertain as to time, but sure in results.

IF the one word DONT, could be painted a mile high and ten miles long, people would still adopt the girl's excuse, when her uncle joked her about getting married, and told her that as her four sisters had all married and none of them with any eminent success. The girl plead justification, as the lawyers would say, as follows: "Uncle, did you ever see father's pigs when their food was put in the trough pretty warm. One would stick his nose in and grab, and squeal, and retreat, and each successive one, even the very last, would repeat the performance;" thus outlining her own determination to "try it, and squeal."

Some folks call this total depravity,
Others might say it was perversity,
It certainly is *human nature.*

Recently I was asked to examine some photographs, and really enjoyed two and a half hours looking them over. Looking at a house, something seemed curious, but indefinite, and on looking again I found the surroundings had been painted out on the negative for some reasons—and upon closely examining the print the strokes were found, as well as the slight lack, or excess, of the line aimed at by the brush in wiping out "the natural." The actuating motive for this was not apparent to my eye, but if my own reasons or criticisms had been given, they would have been—as a rose with no leaves, so is a photograph or engraving of a house with no relief in clouds or back- or foreground, or a portrait with no single one of the natural accompaniments, or, as the artists say, no accessories. Compare such a picture with one of Sarony's own posing, or one of Kurtz's heads, or with one by any one of five hundred other men who live in their work. *Dream* of it, *think* of it, and find new ways to approach the natural,

by simplest expedients, even if you waste lots of plates, and spend weary hours with some stray caller acquaintance as a model; when the result is satisfactory, let "the new wrinkle" go into the operating-room for the pleasure of its patrons.

The means used in many such cases are the simplest conceivable, cheap in very many instances, because more natural in composition and contrast, and such matters "make up" prettily and "work into" such combinations that, frequently, the originator has "a run" until the scenic artists get in their artificial and everybody gets at it.

Such accessories are the finish to any picture, as an old well curb sweep, an antiquated tree in relief, a bit of stone wall, even if demoralized by barefooted imps running over the capstones, until the wall looked like the rows of teeth in some of the pictures of supposed witches; an odd group of trees, or a vine-covered wall, trellis, or some other almost always pleasant accessory sure to be present, gives to the picture a touch of finish that is not approachable by a seared, bald, bleak, painted-out dummy.

But there is another way of looking at such a production; it is careless, not tidy. No excuse need to be put forward as to cost, because out-of-door accessories cost nothing, unless one to five minutes' care in position of camera, and as much more in the development, etc. Then if not quite up in detail, go and try it again, and profit by experience. In other words—

Dont do slouchy work at all.

Dont let a poor thing pass.

Dont accept any but best results.

Dont paint out shadow or sunshine.

Three of the four points named are violations of all good practice, and should be rooted out for decency's sake, if not for success.

Work that is worth doing well should be well done or not at all, and unless the spirit of art appreciation enters into a photograph, you had better "*dont.*"

In most cases, when men have in any but the most sordid sense achieved a reputation in any of the various professions or occupation, it is a noticeable fact that the success was almost in the ratio of the love of the man or woman for his other *chosen* vocation. It may be cultivating trees, flowers, cabbage, or beets; it may be medicine or chemistry, building locomotives, cotton machinery, or ocean steamships. The more a man is in love with his work, the better are his chances of succes, *if only* he is not *careless*, unmethodical, or not able to continue in a certain thing until finished and just exactly right.

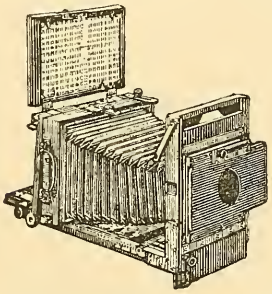
If the axle breaks in a locomotive anyone can see it, and understand it, at least in a general way; but if one of the eccentrics on the same engine become misplaced, or one of the valves in the steam-chest get even slightly out of position, it may worry the engineer for days before he can fasten the trouble in the right place and have it corrected. So with our amateur, guesses are not reasoning, and if a trouble crops up nothing must, or *should* be allowed to prevent getting at the bottom of it. Having found the real cause, you will have accomplished two important things, viz., remedied the trouble, as well as found it; and lay the foundation for one of the prime levers of civilization, and the very foundation of all science, "investigation." When this habit is formed you will find it opens the door of many a trouble, downs many a ghost, saves dozens of plates, and is the keystone to success, the alpha of pleasure in showing your results, the omega of your and my careless, slipshod way of not doing work well, the beginning and end of *dont.*

[*Translated for The Philadelphia Photographer.*]

A USEFUL CAMERA.

Mr. Mackenstein has just perfected a camera which realizes a veritable improvement. As is well known, to obtain correctness of the lines in a photographic print, it is necessary that the apparatus should be absolutely level, and the plane of the ground-glass perfectly parallel to that of the object to be reproduced; it is, therefore, evident that if the camera is inclined or raised, there will inevitably be a perceptible distortion. Let us admit, for example, that we are called upon to reproduce a high monument, and that we cannot place ourselves at the

height of the centre. Necessarily we would be obliged, in order to have a correct image, to point the objective toward the top of the monument. With an ordinary camera, we would have, under these conditions, a very defective result. With Mr. Mackenstein's camera, this objection is avoided. A very ingenious mechanism gives to the ground-



glass a seasaw motion in the direction of its height and width. It will be easily understood that by means of one of these motions, the ground-glass will be parallel to the monument in question; by causing the ground-glass to move in a contrary direction, we obtain the same parallelism in case it is necessary to incline the camera forward; finally, the lateral movement will prove very useful for the reproduction of objects placed at unequal distance; thus, an interior, for example, may be obtained in the most complete manner.—*Le Progrès Photographique.*

POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 441.)

Receipts for Toning Baths.

In the following gold baths, the proportion of gold chloride is always given, but chloride of gold and potash, or gold and soda can just as well be used, only the correspondingly greater quantity must be used. Chemical purity granted, in effectiveness—100 parts chloride of gold equal 131 chloride of gold and soda or 140 chloride of gold and potash.

It is recommended to dissolve the gold salts in a certain quantity of water (1 : 20 or 1 : 50) and to keep it as a stock solution, which one can easily strengthen. If in this stock solution a brownish sediment (gold) should form, then it should be gathered upon a small filter and kept (residue).

Of chloride of gold dissolved in the ratio of 1 : 20 the corresponding 20 c.cm. equals 1 grain of chloride of gold.

Of chloride of gold and soda dissolved in the ratio of 1 : 20, about 26 c.cm. equals 1 grain of chloride of gold.

Of chloride of gold and potash dissolved in the ratio of 1 : 20, about 28 c.cm.

Gold baths that are kept it is necessary to strengthen from time to time, since the gold supply per sheet corresponds to about 0.025 grains chloride of gold; then there should be added from the above stock solution 1 : 20 per sheet; if it consists of chloride of gold, 0.5 c.cm.; of chloride of gold and soda, 0.65 c.cm.; of chloride of gold and potash, 0.7 c.cm.

1. Toning bath with borax. 8–12 parts borax and dissolved in 2000 parts water and mixed 1–1½ parts chloride of gold immediately before the toning. This bath does not keep long and must be made fresh each time.

2. The toning bath with acetate of soda. 10–15 parts of acetate of soda (double dissolved) are dissolved in 2000 parts water and 1–1½ parts chloride of gold added. The mixture should not be used until the next day.

This bath can be kept, and after each using is strengthened for the next day. Many photographers add to this bath about four drops of concentrated copper chloride solution. The tones obtained thereby color rather strong afterward. Others combine this with the borax gold bath.

3. Toning bath with double carbonate of soda. This bath is recommended by Liesegang as follows: 1 part chloride of gold is dissolved in 2000 parts water. Then a solution of 1 part double carbonate of soda to 10 parts water is prepared; pour by drops into that quantity of gold solution which is to be used at once, until blue litmus paper does not redden any more.

This bath works very energetically, but also loses its strength very soon and must be made fresh.

4. Toning bath with carbonate of magnesia (magnesia alba). Dissolve 1 part chloride of gold in 2000 parts water and add to this solution so much carbonate of magnesia until the solution becomes dull and forms a precipitate. Each time it is strengthened it is to be well shaken so as to neutralize the freshly added gold salt.

5. Toning bath with chloride of calcium. 1 part chloride of gold dissolve in 2000 parts water and concentrated chloride of calcium solution added by drops, till the gold solution does not react acid any more.

The commercial white chloride of calcium always contains some calcium oxide, which tends to neutralize it. When more chloride of calcium is added the bath becomes alkaline and then does not keep so long, but works more energetically.

6. Toning bath with lime water. This is made just like the foregoing one, only instead of chloride of calcium solution, lime water is used.

7. Toning bath with chalk (or with carbonate of barium). Dissolve 1 part chloride of gold in 2000 parts water and add to this solution 10–20 parts precipitated chalk, shaking well. The bath can be used after some hours and keeps. It also must be well shaken at every strengthening.

8. Toning bath with chloride of lime. 12 parts chalk or precipitated carbonate of lime and 12 parts acetate of soda (double dissolved), are ground with one part chloride of lime (fresh, must smell well of chlorine) in some distilled water and well shaken with three parts chloride of gold in 4000 parts water; after two days standing during which time a few old unfixed silver prints are dipped in the bath, filtered off without bringing the sediment upon the filter, as much as is necessary for the toning. Experience has proved that pictures which are toned in the chloride of potash toning bath, need not be entirely washed out. Thus in the washing before the toning, there may be used in this case only two wash waters. This gold bath is durable and works very economically. It gives fine velvet-black tones, but the color goes off a little. The strengthening with gold should always take place two hours before using. From time to time a very small quantity of chloride of lime (one-fifth to one-tenth of the original quantity) is to be added, and to be mixed by good shaking through the bath.

9. Toning bath with tungstate of soda (Liesegang's, *The Silver Print*, p. 49). 20 grains tungstate of soda and 1 grain chloride of gold are dissolved in 2½–3 litres boiling water. As soon as the mixture is cold it can be used. This bath furnishes fine rosy-purple tones and can be kept. Before each re-use some gold and double as much tungstate are to be added. This bath becomes red, which does not injure its quality.

The Fixing and Washing.

The purpose of fixing is to remove from the picture all that chloride of silver which was not reduced by the effect of the light, but was left light-sensitive. There are several salts which possess considerable dissolving capacity for chloride of silver, especially hyposulphite of soda, cyanide of potash, ammonia, alkaline chlorides, etc. But the cyanide only has a higher dissolving capacity than hyposulphite of soda, or fixing soda, as it is commonly called.

The solution of the chloride of silver in hyposulphite of soda, results in the formation of hyposulphite of silver, which unites with hyposulphite of soda in an easily soluble double salt, if the soda salt is present in sufficient surplus. When this is not so, another double salt difficult to be dissolved arises, which is decomposed more easily than the former in the formation of sulphide of silver (see Dr. Vogel's *Handbook*). This latter double salt seems to be formed in practice sometimes, when several pictures sticking over one another are brought to the fixing bath at the same time, or when the pictures lie too close to one another.

These pictures get—usually in the middle—dirty yellow or green spots which color still darker in the light. Therefore the pictures should be laid in the fixing bath *singly* and each *well dipped* under before the next one is put in. Also, too many pictures should never be fixed at the same time, because they might stick to each other and cause the spots mentioned. If these spots once come they cannot be removed and the pictures are lost.

The fixing should last about five minutes. Longer fixing is not necessary and to the finest light details is a disadvantage, since these are situated entirely on the surface and can, therefore, be easily washed out. Moreover, if the pictures are not fixed it can be noticed by the cloudy and mottled appearance of the whites. The inexperienced should not, however, allow himself to be deceived by the structure of the paper.

The requisites for the fixing bath are as follows:

1. It must contain a sufficiently large quantity of fixing soda, best, 100 parts water, 10 parts hyposulphite.

2. It must not be too often or too strongly used.

3. It should not be used too cold, but have the temperature of the room.

No. 1. The degree of concentration of the fixing bath varies considerably, yet in practice stronger baths than 1:6 are seldom used. The combination 1:10 is perfectly sufficient. The concentrated fixing baths have the disadvantage of causing blisters under the albumen in the washing.

No. 2. The capability of the hyposulphite of soda to dissolve chloride of silver is not an unlimited one. With equivalent proportions it should be possible to transfer more than one-third the weight of the dry fixing soda with chloride into the easily soluble double salts. Since, however, it is to be considered that the soda solution from its penetrating into the albumen layer has to instantly transpose the chloride, and in the deeper layers can only be a mixture of silver-soda salt and soda salt, it is manifest that one is compelled to use a sufficient excess of fixing soda. Ordinarily it is customary to use the same fixing bath only two or three days and then make a fresh bath. Many photographers use it only once and this is to be highly recommended. Old, very long or strongly used fixing baths dull the tone. Sometimes old fixing baths give acid reactions, and thus the gloss of the albumen layer is injured or is quite dissolved, and the whites colored yellow. Burton recommends the addition of so much ammonia to the fixing bath that the latter smells distinctly of it; thereby much finer and more brilliant tones can be obtained, and one is sure to obtain more lasting pictures. This addition is, moreover, a good means of preventing blisters, for as already remarked, blisters arise from acid or not sufficiently neutralized gold baths.

The Washing after Fixing.

The thorough washing of the pictures after the fixing is just as important as the fixing itself, for the soluble double combination of hyposulphite of silver and soda and the surplus fixing soda also, up to the last chemically perceptible traces, are to be removed from the albumen layer and from the paper. Ordinary well water can be used as a wash water, yet it is to be recommended not to use freshly drawn water, but such as has stood a day. It is best, however, to use rain water. The washing itself should be done as quickly as possible, at least inside of a few hours, for it has been proven that long washing injures first the fine delicate details and in due course the whole picture. The water should, therefore, be changed frequently, and wash water and pictures kept, if possible, in constant motion, for which purpose the washing machines which have been constructed can be used. The washing is to be stopped just as soon as there comes a water in which is no more fixing soda. The examination for fixing soda can be made according to Vogel's method with iodine and starch in the following way: Starch paste is added to a little potassic iodide solution and a diluted alcoholic solution of iodine stirred in until a blue color appears; now by diluting with considerable water a fluid, distinctly blue, iodized-starch solution is formed. The examination itself is best done by comparing in two little test-tubes of the same calibre, equal quantities of unused and of the latest used wash water well shaken up with just as much starch solution. If there is still fixing soda in the wash water then in the tube there will occur a change of color which by comparison with the unused trial water will be easily distinguishable.

Still simpler is the use of the reacting paper for fixing soda recommended by Elsden. Filter paper is dipped into starch paste and dried and then soaked in a moderately strong alcoholic solution of iodine.

After the drying the paper appears a purple color, but when moist it is a dark blue. So long as this changes color more in the used water than in the fresh or unused water, fixing soda is still present in the former. In order to shorten as much as possible the troublesome and tedious washing of the pictures, various chemical additions have been proposed which purpose to destroy the hyposulphite of soda present; as, for instance, alum, eau de javelle, bromine water, hydrochloric acid, nitrate of lead, sugar of lead, subchloride of zinc, and many others. These additions are not to be recommended, and should only be used by way of exception when it is compulsory to finish the pictures quickly. It is self-evident, too, that they should only be used when the greater part of the hyposulphite is already removed, and the question is to remove only its more difficult last traces.

(To be continued.)

OUR PICTURE.

Surely one more return to the graceful class of little subjects who bring joy to the home and ducats to the photographer, will not be objected to by our readers. The example which graces our present issue was produced by Mr. E. L. Willis, Milford, Mass., and is a fine proof of his skill in the treatment of the beautiful. It is an admirably lighted picture, and is equally praiseworthy for its technical excellences. One rarely sees a more charming gradation of light and shade than there is here, all secured and saved by careful development. One of the chief interests of the picture comes from the fact that the original negative is 11 x 14 inches in size and that the negatives from which our prints were made are reductions. In comparing the small prints with the large one from the original negative, we fail to note any loss of quality in the reproductions. The small negatives were made by Messrs. Roberts & Fellows, Philadelphia. These gentlemen also made the paper prints on the famed N. P. A. paper, now used so extensively everywhere and imported by Messrs. E. & H. T. Anthony & Co., New York. The uniformity of the prints cannot be seen by our readers, for want of opportunity to compare them, but they are all one could hope for from a first-class albumen paper.

In our next issue we shall present two admirable out-door studies of one subject, reproduced by Mr. Wm. Kurtz, of New York, by means of two of his zinc-etching processes. Expect something extra fine.

[*Translated for the Philadelphia Photographer.*]

VEGETABLE DEVELOPERS.

BY M. P. MERCIER.

During the course of some recent investigations with photographic developers, I was brought to experiment with a number of vegetable substances having the property of becoming oxidized in contact with the air, under the influence of light, acquiring a more and more deep color. Such, for example, is *eserine* or *calabarine*, obtained from the calabar bean, of which it is the active principle, very often used for various diseases of the eye. Eserine, when pure, resembles somewhat gelatine, absorbs humidity very readily, and is rapidly changed into a substance having a deep violet-black color. The solutions do not keep well, especially in open bottles, and also acquire a very decided violet color. My experiments were made with a solution of 1 gramme for 100, to which 10 grammes of sulphite of soda and 10 grammes of carbonate of potash were added. In this solution, perhaps too greatly diluted, the image develops itself very slowly, and after from ten to fifteen hours we obtain a cliché, which, instead of being black, as is the case with iron or hydroquinone developers, has a very beautiful violet color. It is possible to obtain by this means glass positives of a remarkably delicate tone. By omitting the sulphite of soda, the cliché is more rapidly developed, but the solution quickly spoils. Unfortunately, eserine is highly priced, costing not less than from 10 to 12 francs the gramme, consequently it is only as a photographic curiosity that it merits mention. It is also in the same light that I would cite as giving results, if not practical, at least appreciable, certain vegetable infusions, such, for instance, as the infusion

of *mullein flowers*. These flowers, which, when fresh, have a beautiful yellow color, blacken when exposed to air and light, and should be well pressed down in jars lined with tinfoil. If we make an infusion of these flowers in water containing five per cent. of alcohol, and if we treat with this infusion, to which ten per cent. of carbonate of potash has been added, an impressioned gelatine-bromide plate we obtain, after a certain number of hours, a cliché in which those portions which have been the most acted upon by the luminous rays are visibly detached. A concentrated infusion of *green tea* gives still sharper results: we obtain an image in which the details are perfectly detached. Take, for example, 50 grammes of tea which infuse in 100 grammes of water, and after having expressed and filtered, add from 15 to 20 drops of pure ammonia. Place the impressioned plate in this liquid and wait for a few hours. *Oak bark* gives analogous results; here, as in the case of tea and mullein flowers, it is the tannin that acts. The infusion of these substances when hot produces the acetate of silver, and, when cold, the bromide of silver impressioned by the light. It is probable that many other vegetable substances, such as the hull of fresh nuts, whose juice, for example, rapidly darkens when exposed to the air, possess the same developing action. Guaiacum, which contains a highly oxidizable resin, shows effects still more rapid. It is sufficient to pour over 30 grammes of ordinary grated guaiacum, not rendered blue by light, and wet with alcohol at 90 degrees, a warm solution of 10 grammes of carbonate of soda in 100 grammes of distilled water, to obtain a developing liquid. When the impressioned plate is plunged into this bath, the image appears at the end of a few minutes, and we obtain a cliché possessing all the details of great clearness and of a very peculiar yellow tone.—*Progrès Photographique.*

PRACTICAL POINTS FROM THE STUDIO.

Perchloride of Iron as an Intensifier.—There is a substance seldom alluded to in photography, which is, nevertheless, very useful to bring back to a required intensity an over-developed or over-exposed cliché, namely perchloride of iron. Here is the manner in which I use it.

I first remove all traces of hyposulphite from the cliché. I then make a solution of perchloride of iron, in the following proportions:

Perchloride of Iron . .	50 parts.
Distilled Water . . .	50 "

I place the cliché in a dish and pour the mixture over it; the intensity is rapidly diminished, and as soon as the required degree of strength is reached, wash in abundant water. This last operation should be performed very quickly, as the tone of the cliché lowers with great rapidity.—G. Seguin, *in L'Amateur Photographe.*

Modification of the Platinum Process.—Mr. Willis has just proposed returning to an old process, that of using the platinum salt in the developing bath instead of placing it in the paper. This is what we proposed doing several years back. Mr. Willis coats his paper with ferric oxalate, to which he adds a weak trace of mercuric chloride. He prints in the ordinary manner then floats the print on a bath of chloride of platinum and of oxalate of potash; develop without the aid of heat. Doubtless the process with all its details will shortly be published. It possesses a great advantage over the method now in use as it only requires that the paper should be coated with ferrous oxalate. The cost of platinum prints will thus be considerably lessened.—Leon Vidal *in Le Moniteur.*

Transfer of the Gelatine Film.—Here is the way the gelatine film is now removed with the aid of hydrofluoric acid:

The plate is coated with rather thick collodion, and, as soon as this is set, the plate is plunged into a solution containing four cubic centimetres of commercial hydrofluoric acid in three hundred cubic centimetres of water, and placed in a *papier-maché* vessel. Gutta-percha or ebonite might be used, but glass would be attacked. The film soon leaves the plate; it is raised with care and hung up to dry.—Dr. Phipson in *Le Moniteur.*

PROCEEDINGS OF THE



The Ninth Annual Convention was held at Minneapolis, Minn., July 10th to 14th, 1888. E. Decker, President; W. H. Potter, Secretary.

First Day—Afternoon.

The first session was held at 3 P.M., Tuesday, July 10th, the President in the chair. The meeting was called to order, and owing to the absence of the Secretary, Edward L. Wilson was appointed Secretary *pro tempore*.

His honor, Mayor Ames, of Minneapolis, was introduced, and that gentleman made an address of welcome to the hundred photographers assembled. He was responded to by President Decker. The regular business was then proceeded with. The roll-call was dispensed with, and in response to the call for the reports of standing and special committees, Mr. W. H. H. Clark, of the *St. Louis and Canadian Photographer*, read his report on the "Progress of Photography," (See page 473.)

The selection of a locality for the 1889 Convention came next in order. Washington, D. C., and Boston, Mass., were the only places nominated. One hundred ballots were cast, resulting in 48 for Washington and 52 for Boston; whereupon Boston was declared to be the choice.

The following gentlemen were appointed to nominate officers for the ensuing year: A. H. Plecker, Cook Ely, and Messrs. Morton, French, and Pearson.

Some amendments to the Constitution were offered for a second reading, after which the Convention listened to the annual address of the President, a copy of which has failed to reach us from the Secretary.

Second Day.

At the morning session, after the reading of communications from absent members and others, the Committee on Life Insurance presented their report. It was lengthy and elaborate, but its suggestions did not meet with favor, and it was not adopted. The general sense of the meeting seemed to accord with the suggestions made in this magazine of the issue of July 7th. The vote being taken, it was decided "not to adopt any life-insurance scheme whatever."

The Committee on Nominations reported, and tellers were appointed. In order to secure attendance to the end of the election, it was resolved that the doors be closed, and no one permitted to leave the hall until the close of the election, or the end of the session.

Owing to the sparse attendance, the business of this session moved slowly, and it became necessary when adjourning to move for an afternoon session.

Mr. W. H. Jacoby, of Minneapolis, invited the delegates to an excursion at 6 P. M., to Minnehaha Falls.

The Committees on Fire Insurance and on the H. T. Anthony Memorial reported. (See our next issue.)

Afternoon.

Decidedly the chief interest of the afternoon accompanied the reading of Mr. Enoch Root's excellent paper on "Photography a Fine Art" (see page 475). It was followed with much enthusiasm. A paper on "Scientific Development," by Mr. J. Carbutt; one on "Reducing the Density of Negatives by Various Agents," by Dr. Charles Ehrmnan, of the *Photographic Times*, and another on "Transferotype Paper," by Wm. H. Bellsmith, were read. They will appear herein later on.

Discussions took place on "Ten per cent.," and on "The Metric System."

Dr. Arthur H. Elliott, of Anthony's *Photographic Bulletin*, strongly advocated the claim of the metric system, and in a few words made very plain to those present its advantages, especially in regard to the troublesome question of "parts." Later, a resolution was passed by the Convention to

adopt the decimal system, requesting the editors of photographic journals, and the writers therein, to express all formulæ in the denominations of the decimal system, accompanied by their English equivalents. It was also resolved to respectfully request the manufacturers of dry plates to express the formulæ for their developers and other solutions in the denominations of the decimal system as well as in the English weights and measures.

Mr. W. F. Holden, of Luverne, was announced as the lucky winner of Mr. Cramer's $100 cash prize, his number being 370. Later in the day, on the kind invitation of the Minneapolis and St. Paul photographers, and the photographic merchants of these hospitable cities, the members and their friends visited the lovely Falls of Minnehaha in a body, and seemed to thoroughly enjoy the little excursion.

Third Day—Morning.

After the disposal of the usual routine business, and a paper on "Dry Plates," by G. Cramer, was read, the election of officers was taken up. The hour for adjournment came before the process could be worked out, and it had to be finished next day. This is a cheerful sign, and evinced increased interest. The following were elected:

President.—H. McMichael, of Buffalo, N. Y.

First Vice-President.—Geo. H. Hastings, of Boston, Mass.

Second Vice-President.—J. M. Appleton, of Dayton, Ohio.

Secretary.—O. P. Scott, of Chicago, Ill.

Treasurer.—G. M. Carlisle, Providence, R. I.

As Mr. Stein withdrew in favor of Mr. McMichael, the unanimous ballot of the assemblage was cast for the latter by the Secretary. Much enthusiasm prevailed when the popular President-elect, and excellent photographer, arose and addressed his coworkers.

He acknowledged the honor placed upon him, and predicted an enthusiastic convention at Boston in 1889, when, he hoped, everybody would be there to help celebrate the semi-centennial anniversary of our art.

As per previous arrangement, Thursday afternoon was devoted to the steamboat excursion on Lake Minnetonka. That veteran photographer and pioneer stock-dealer, Commodore Charles A. Zimmerman, conducted the excursionists on his splendid steamer "Belle of Minnetonka," and a lovely sail around the lake followed. Everything was done by Mr. W. H. Jacoby and his fellow-committeemen, to add *eclat* to the occasion. Mr. T. W. Ingersoll, of St. Paul, made the group while a halt was made for the purpose. Copies can be had of him for 75 cents. Thus, a hot day at Minneapolis was escaped, and the craft returned in the evening braced up for the work of Friday.

Fourth Day—Morning.

The election was proceeded with, resulting as we have already announced, and Messrs. Rockwood and Overpeck demonstrated "Flash" photography.

Afternoon.

Papers and discussions were the order for this session, until the Jury of Awards came in with their report, and the Committees on Individual Prizes also announced the result of their labors. The list is as follows:

Class A.—1st. O. P. Scott, Chicago; 2d. J. E. Rosch, St. Louis; 3d. James Landy, Cincinnati.

Class B.—1st. S. L. Stein, Milwaukee; 2d. J. M. Appleton, Dayton; 3d. H. McMichael, Buffalo.

Class C.—1st. J. M. Appleton; 2d. S. L. Stein; 3d. J. E. Hale.

Class D.—1st. J. M. Appleton; 2d. J. E. Hale.

Class E.—1st. W. H. Jackson, Denver; 2d. G. E. Curtis, Niagara Falls; 3d. G. E. Mellen, Colorado Springs.

Class F.—1st. J. H. Smith; 2d. H. G. Peabody, Boston.

Class G.—1st. G. F. Barker, Niagara Falls; 2d. J. A. Brush, Minneapolis.

Class H.—1st. Theodore Heinig, Dayton; 2d. T. W. Ingersoll, St. Paul.

Class I.—1st. H. G. Peabody; 2d. Stuber Bros.

Class L.—1st. The Eastman Dry-plate and Film Company; 2d. J. M. Jordan, New York; 3d. C. F. O'Keefe, Fort Madison.

Foreign Exhibits.—Gold Medal. A. Marn, Frankfurt; Silver Medal. Albert Meyer, Berlin.

Mr. George Eastman, of the Eastman Dry Plate and Film Company was awarded a special certificate of honor for the various advances and improvements which he has made in manufacturing and introducing new goods and materials for photographic purposes.

Mr. James Landy, of Cincinnati, again won the Blair Cup, in the Hiawatha competition, which now entitles him to the permanent possession of the prize. Messrs. Montfort & Hill, of Burlington, Iowa, were awarded a certificate of honor for their "Hiawatha" picture.

President-elect McMichael, won the "Acme" Burnisher prize "for the best collection of photographs;" and the flash-light burner prize was awarded to L. C. Overpeck, of Hamilton, Ohio.

The Eastman prizes were awarded as follows: For the best single enlargement, gold badge valued at $75, to Theodore Heinig, of Dayton, O.; best collection of enlargements, silver cup valued at $100, to C. F. O'Keefe, Fort Madison, Iowa. E. N. Jennings, of Philadelphia, received the $75 medal for the best collection showing the greatest variety of applications of transferotype paper.

The Anthony prizes were won by: J. M. Jordan, New York, $50 for plain enlargements; George Heyn, Omaha, Neb., $50 for crayon-worked enlargements; L. Walkup, Rockford, Ill., $25 for water-colored enlargements.

The prize for the best water-color done with the *Air Brush* over a print, was awarded to A. R. Cottrell, Minneapolis. The prize for the best black and white portrait over a print, was awarded to N. T. Kelly, Racine, Wis. The Awarding Committee consisted of President McMichael, and Messrs. Doerr, of Louisiana, and Long, of Quincy, Ill. A fine display of Air-Brush work was made, but, unfortunately, much of it being free hand, could not compete for the prizes, which were for print work solely In fairness to the Air Brush artists—many of whom are not willing to do print work—it would seem that prizes should be offered for free-hand work as well as print.

The E. & H. T. Anthony & Co. prize for the best water-color on their bromide paper, was also obtained by a picture finished exclusively with the Air Brush.

Convention adjourned.

THE EXHIBITION.

There were some very fine pictures at the exhibition, which rendered it impossible for any one who has watched the progress of American photography, to overlook the growth that has taken place during the past year. The study of art principles, as laid down by Burnet's *Essays*, is very apparent, and there is more evidence of refined ideality and less crude reality than there ever has been before. Those who are trying to improve their work æsthetically no longer content themselves with a superficial supply of art ideas and "then go in dumb" as the saying goes, and produce works which are not artistic beyond the very slightest suggestion. On the contrary, in some, in a goodly number, of the works at the Minneapolis Exhibition there is plentiful evidence that the masters who sent them forth from their cameras have carefully studied to the very bottom of the best principles and in every way known to them tried to secure the best possible results. In a number of cases the artists themselves pointed us to their works and remarked, "That is the best I know how to do." To one who has interestedly watched them for all these years and tried to help them, these were "winged words" whose magic effect was augmented by the enthusiasm shown by the same parties when they pointed out to us how they did this, why they did that and thus and so, as they went on with the study and execution of their best ideals.

In technique, where the work is just as good as it can be, we do not look for much progress. We do not see how anything can excel the manipulation of the average American photographer of to-day. And with so many excellent plates and that printer's best blessing the N. P. A. paper, it would be a blot upon the photographic escutcheon if

the finish of our photographs was any less fine than it is.

In variety, there was everything from the the daguerrotype to the lovely Eastman transferotypes upon porcelain. The novelties were the transferotypes and the flash-light pictures. The former are very perfect and beautiful, and some remarkable results were shown from artificial lighting. But in the latter direction there is room for very great progress and improvement. "More light" is not needed, for there is plenty, but a better management and control of the flash must be studied out and secured, before the most pleasing results can be had.

We did not attempt to make a catalogue of the pictures or of the exhibitors represented. It would be tiresome to our readers to publish such a catalogue. The comments which follow are upon such works as impressed us when we made our visits. We learn that some good work was hung afterward by lag-behinds, for which cause and for the reason of our necessarily early departure on account of illness, we did not see.

Of the varied classes into which the work was divided in our comments upon the Chicago Exhibition, there was not enough to make such a division profitable this time, so we merely follow the course of the usual looker-on and will try to give our readers who could not be present, some few points upon what there was to see.

The pictures were tastefully arranged upon the walls of a series of small apartments, which made it very comfortable for the visitor. He could take his ease and comfort in the enjoyment of one course at a time without seeing before him long spread out, the long appetite-destroying whole repast.

As one entered the first of these enclosures, on the right, hung the magnificent collection made upon the M. A. Seed Dry Plates. These were from various master photographers. The veteran ex-President and ex-everything which pertains to earnest photography, Mr. J. F. Ryder, Cleveland, O., was represented by a variety of subjects, which were admirable. The gem of his collection was "Mess 8," a group of chivalry, naturally posed and splendidly caught. The best outdoor work was an iron bridge in construction, and the life-size portrait of Miss Potter was a marvel of excellence.

Mora, of New York, made several fine portraits of skilfully posed ladies serve as his help to the good collection. A soldier, a priest, and some female figures were added by Mr. J. Steffens. The children and bust pictures by Decker & Wilber were very excellent. A trio of 14 x 14 children pictures, framed side by side, attracted much attention. Nothing could easily excel them. In the Seed collection a fine portrait of a collegiate by Epler & Arnold, Saratoga, N. Y., was well done.

The prize collection of the Air-Brush Manufacturing Co., Rockford, Ill., came next and contained some wonderful productions in black and white and in color. A list of these will be given and the prizes announced elsewhere. The capabilities of this wonderful helper in brush work are being marvellously developed.

Mr. E. Long, the veteran enlarger with a large heart, of Quincy, Ill., placed a lovely daguerrotype upon the wall, and under it one of the same person made by his "improved gilding" process. They were greatly admired and a revelation to many of the younger ones.

Mr. Rosch, of St. Louis, is one of our best photographers. He had two pictures of ladies grouped with a sleeping child, which were very lovely and excellent. His "mark" was made, however, by a full-sheet picture which he called "Alone." It represented a young mother standing in a cemetery at the grave of her little one. In attitude, expression, and lighting it was very fine. In modest attire, with flowers in her hand, the bereaved one stood by the monument of her little one. On the face of the marble the name "Nettie" was inscribed, and below, these words:

> "Those little hands thoul't raise no more
> To meet my loving, fond caress;
> For death's cold blast, in passing o'er
> Has snatch'd thee from affection's breast."

Mr. E. Krueger, Ann Arbor, Mich., competed for the "Hiawatha Prize;" but as we have been informed that the jury appointed to award the prize will prepare a paper upon

the various competing pictures, we refrain from commenting upon any of them ourselves. Mr. Krueger's "Cast up by the Sea"—a young and beautiful maiden lying upon the pebbly beach, dead, was very well conceived and cleverly managed. A fine picture of a dog, called "Our Tip," seemed to be a splendid portrait.

Messrs. Stuber Bros., Louisville, Ky., exhibited a collection of negro character pictures which displayed a good sight of genius. They were very humorous and excellently done. More of this class of *genre* pictures should be sought after. A picture of an old gentleman, and another of the profile of a lady were among the best works of Stuber Bros.

Some very suggestive poses of children were from Mr. Cowey, of Iowa City, Iowa. A mother and child and a combination of a small boy and a hat and a bee were examples of careful work.

Mr. L. C. Overpeck, Hamilton, O., made up his exhibit principally of flash-light pictures taken by his own apparatus.

Mr. Chas. Reutlinger, the veteran Parisian photographer sent over a very nice collection of small pictures, the most remarkable of which were of cats. All of these were given expressive titles. One of a cat watching a fly and called "*Au Guet*" was most adroitly caught. A large portrait of Victor Hugo, made several years ago, was the gem of Mr. Reutlinger's collection.

Mr. Ingersoll, of St. Paul, made a fine architectural display, but we expected more snow views from him. His "Carnival" and "Old Dam" and a group of two young ladies sauntering in a shady walk, were among his best productions.

Mr. J. C. Rasmussen, Rock Island, Ill., placed a very select collection of 14 x 17 portraits to represent him, but it was wholly eclipsed by the simply dressed, lovely portrait of his own sunshiny, sweet little girl. The picture cast an element of breezy cheerfulness all about the room.

Mr. A. Flammang, the veteran foreman of the American Optical Co.'s apparatus factory, exhibited the best interior groups by the flash-light. There were about a dozen of 11 x 14 size of evening parties and groups in which the light was most carefully managed. One of these was of W. Irving Adams, Esq., and family. Mr. Flammang seems to have found out how to drive the flash-light where it will be most effective.

Mr. A. T. D'Ole, Kansas City, Mo., included a fine three-quarter portrait of Wm. Bradford, Esq., the famous painter of the Arctic regions, among his examples of fine portraits.

The views of Colorado and Colorado Springs, as well as his architectural work, did good credit to Mr. George T. Mellen. The rarity of such work in the exhibition made it all the more attractive.

The prize collection of the Eastman Dry-plate and Film Co., we could not fully take in if we had had two or three days to examine it. A visible and great improvement was surely apparent in the bromide enlargements, but the tide seemed to turn from them to the newer "transferotypes." These were shown on almost every known material from the roughest alligator hide to the mat surface of the ground porcelain. The direct prints and enlargements made from the film negatives produced by the new "Kodak" camera and process were simply marvellous and attracted a great deal of attention. The prizes awarded are named elsewhere.

Mr. Geo. W. Wise, Steubenville, Ohio, seems to have made family groups a specialty, for in making them he surely excels

Mr. Anton Rhode, Chicago, exhibited some good composition pictures, but if he is responsible for the overstrained expressions of his subjects, he should study improvement in that important direction.

Among the unusually fine heads exhibited by Messrs. Montfort & Hill, Burlington, Iowa, was one of a nun which particularly attracted our admiration. These gentlemen are on the constant and rapid improve, and their hard work is apparent in their fine results. They competed in the "Hiawatha" contest.

Mr. S. L. Stein, Milwaukee, Wis., is not made of the sort of material which would allow last year's disappointment to prevent him from renewed effort this year. The prize-list will show what consideration the jury accorded his splendid pictures. Among

his best—and among the best on exhibition —were his "Nubian Fruit Seller," "The Song of the Slave," "In the Studio," "The Dancing Girl," "Here's Looking At You" and "Maud Muller." They were all artistically and technically beautiful and excellent.

Mr. J. Hegyessey, Alliance, Ohio, made a great point on his pictures of children. They were very sweet. Two little girls kissing; a little girl kissing her hand to the statue of a child, and a child asleep were among the best.

Strauss, of St. Louis, besides some fine air-brush work, exhibited two pictures illustrative of the rise and progress (and fall) of the juvenile cigarette-smoker, which were well done. One was called "The Light of Progress" and the other "The Progress of Pallor."

Mr. B. L. H. Dabbs, Pittsburg, Pa., is a veteran, but he constantly improves his work. His exhibit was one of the studied attractions of the apartment.

A dozen or so unframed pictures hung by themselves upon the walls of one of the smaller apartments. They received more commendation and praise than any other single exhibit of their class. This was due to their high average and uniform quality. They were from the studio of Mr. Appleton, Dayton, Ohio. There was an absence of all showy backgrounds and accessories, and skilful care was given to the plain gradated background instead. In this line Mr. Appleton is a master. The method of the artist is shown all through every piece of his work. It was hard to choose "the best," but his "Forty Years Ago" (a quaint couple dressed as our forefathers were), "Guess Who," "The Confidants" and "Nero and Zip" (a twain of Russian bloodhounds on the alert) were splendid to a superlative degree. (Prize.)

Mr. Theo. Heinig, operator for Mr. Appleton, made an individual exhibit of architectural and portrait bromide enlargements which was very creditable and for competition. It took a prize.

Studied lighting and good technique characterized the pictures of Mr. Hale, of Seneca Falls, N. Y.

The splendid "Desdemona" and portraits of Booth and Barret, by Mr. James Landy, Cincinnati, have already been commented upon in this magazine. At Minneapolis they were surrounded by many other very fine examples of Mr. Landy's work, but he evidently gave his first care to his picture for the "Hiawatha" contest. He also appeared in the competitions elsewhere. For example we find him among the "Six Cabinet Lots," in company with Messrs. Stout, Unionville, Mo.; Ditmar & Burritt, Kenosha, Wis.; S. M. Adams, Elgin, Ill.; A. L. Bowersox, Dayton, O., and many others. Some capital photography was shown in these small offerings.

Mr. Joe L. Douglass, Carthage, Mo., exhibited some fine portraits, including the Greek model we have heretofore reviewed He is a very young artist and deserves great commendation for his work.

President-elect Mr. Michael excelled himself this time and showed work well worthy of a chief officer. It shows more careful study of art principles than his excellent work at Chicago did—his results become more refined. What could be more so than his unrivalled "Five O'clock Tea" groups? They were more than charming. Among his greater pictures were "The Storm," "La Belle Breton," Robert Downing as "Virginius," "Diana," "Knight of King Charles," "Happy Days," and a swinging, smiling, merry group of children called "All Ready," with its companion "Go."

Mr. G. E. Curtis, Niagara Falls, N. Y., exhibited some very fine full-sheet views of our great cascade.

Mr. C. H. Stoddart, Erie, Pa., made seven efforts in the "Hiawatha" contest with real Indians for his models.

Mr. C. F. O'Keefe took the Eastman cup for his bromide enlargements. Among his best contact work was the portrait of a nun, which was a fine example of light and shade.

Messrs. Harman & Tenner, Bay City, Mich., exhibited some admirable portraits of very fine finish.

Certainly no interior views excelled those of Mr. Geo. Barker, Niagara Falls, N. Y. They were a great and agreeable surprise to those who had known Mr. Barker heretofore only through his admirable Niagara and Florida views. In this new direction

he has proven himself fully as able as in others. "His interiors are lovely, and that is the only word for them," we heard an admiring photographer say.

All the way from Denver, Col., in person, came a photographer to hang his own exhibit and to see that a good light was secured for it. This was Mr. W. H. Jackson. There was nothing shown, of its class, to approach it. All the country is familiar with Mr. Jackson's results. Since last year he has been to the Yosemite Valley and among the ranches of the Pacific. As a result we have to delight us a series of pictures, which, though of familiar subjects, are "different" in treatment from anything done before. There is a lovely, dreamy, fascinating charm about them which can only be attributed to Mr. Jackson's individuality. His "Cloud Rest" in the Yosemite, and his "Coast" at Monterey are as different as feathery clouds and ragged rock can be, and yet they possess the same general character. So is it with his stately "Date Palms" and his grasping, wide-spreading "Live Oaks"—in all his feeling pervades the treatment of his subject. The "Noisy Cascade" of 1500 feet in height, hangs close to the low, sombre, quiet interior of the "Old Spanish Mission," and yet these contrasts do not seem inharmonious, for one master hand has treated them all after his own style. Mr. Jackson's pictures were all unframed, and excited the highest interest. He was always willing to instruct in his methods, and confesses himself "a close student of Burnet's *Essays*."

Many of those we have mentioned, have, as will be seen, obtained prizes.

Those who are not mentioned are not intended to be slighted, but for the reasons stated were not seen during our visits. We hope some helpful lessons may spring from what we have said.

THE EXHIBIT OF THE MANUFACTURERS AND DEALERS.

The articles exhibited in this department have been so well ventilated by means of our advertising pages, that more than a catalogue of our advertisers and others who were represented at Minneapolis, is here unnecessary. The improvements and novelties will be specially mentioned as we go on.

The principal merchandise and apparatus exhibit was made by Mr. O. H. Peck, of Minneapolis, and it was a very large and creditable one. Indeed, it seemed like a miniature stock depot, so complete was its arrangement and variety. All the leading articles were shown, with a fine assortment of the American Optical Co.'s apparatus, and one large case was devoted to *Wilson's Photographic Publications*. Another apartment was set apart for lenses, including the celebrated Voigtlander's. Mr. Peck was present in person nearly all the time, with a number of assistants, headed by Mr. Wunderlich, his first lieutenant.

Messrs. Zimmerman Bros., St. Paul, Minn., occupied the space next to Mr. Peck, with an extensive collection of requisites, which proved very tempting to the visiting photographers. Mr. E. Zimmerman, his son, and others, were in attendance.

Messrs. E. & H. T. Anthony & Co. made a fine display of their apparatus, in connection with the Zimmerman department.

The fine exhibit of the Blair Camera Co. came next. Mr. E. Clay Blair was in charge.

Mr. H. A. Hyatt, St. Louis, Mo., had an interested crowd about him continually, examining his new and improved apparatus for making stamp portraits—a very ingenious and complete arrangement, working perfectly. The vignette attachment for making dark-background vignettes, was another of Mr. Hyatt's specialties in favorite demand. His exhibit of pictures made by his various improvements, was likewise very attractive.

The G. Cramer Dry Plate Company was a miniature exhibition in itself. No plates or negatives were shown, but it seemed as though the *gems* of the exhibition proper were duplicated in the Cramer exhibit, labelled "made on Cramer plates." It was a magnificent showing, such as one dare expect from such a famous establishment.

The Gundlach Optical Co., Rochester, N. Y., represented by Mr. Turner, besides showing a fine collection of their American made view lenses, for the first time exhibited some of their new portrait lenses. These formed one of the novelties of the exhibition, and, from appearance, promise much.

There are two series of eight sizes each, the largest being 6⅝ inches in diameter.

The Acme Burnisher Co., Syracuse, N. Y., to whose excellent flue-heating burnishers we called attention in our last number, made an unusually fine display. The company was represented by Mr. Bolles. Beside the "no smoke, no smell, no soot" gas heater, there was exhibited the "Odorless Lamp Stove," and the "New Acme Patent Portable Rack," intended to serve as an extra oil stove. As it gathers its heat from the burnisher heater, fuel for it costs nothing. Such economical tools as these met high favor on all sides.

Messrs. B. French & Co., Boston, represented by Mr. W. A. French, "had nothing better than the new Portable Euryscope to exhibit," and a splendid collection was there.

The Smith & Harrison Dry Plate Co., Iowa City, Iowa, made a fine display of photographs from negatives made upon their plates. They were assisted by Mr. Frank M. Pickerell, the favorite veteran demonstrator, who added his own collection of the cabinet portraits of about two hundred practical photographers. The last collection was most interesting.

"The only Seavey" (L. W.) the New York background and accessory producer, made a fine showing, and was present in person.

The collection of the M. A. Seed Dry Plate Co., besides showing many admirable portraits and views represented by the prize pictures in the general exhibition, had several added novelties. One of these was a series of pictures and negatives produced by means of the new "Seed Transparent Vignetter," and a similar collection grew out of the use of the "Seed Ready-prepared Developer." The results, as we should expect, were fine, and won over many to following suit. Both are welcome innovations to all the craft.

Messrs. Brown & Goldsmith, Springfield, Mass., exhibited three sizes of their patent cases for containing paper while subjected to their useful "Preservative." These cases hold sheets from cabinet size up to 18 x 22 inches in size. This admirable "Preservative" is a precious boon to the printer, and a great saving "success" to his employer.

Messrs. Sweet, Wallach & Co., Chicago, exhibited some lovely backgrounds and foregrounds, and astonished all visitors with examples of work upon McGowan's dry ferrotype plates.

Messrs. Allen Bros., Detroit, Mich., were represented by Mr. W. H. Allen, who skilfully presented the indisputable advantages of the Suter Lenses, of which a fine variety was exhibited. It must be a pleasure to Messrs. Allen Bros. to know that every Suter lens they send out is *sure* to satisfy its purchaser.

Mr. W. G. Entrekin, Manayunk, Pa., made an unusually extensive display of his varied Enamelers and Burnishers, and presided over his exhibit with assistants.

Messrs. E. & H. T. Anthony & Co., New York, made a very elaborate and very beautiful display of prints made upon their Bromide Paper, which included the pictures offered in competion for their prizes. It seems to us that this paper has reached the highest desires of makers and users. Besides the above, daily demonstrations were given in the Anthony dark-room, and prints were made from any negative furnished. This proved to be one of the most attractive novelties of the entire exposition, and was a popular resort for the photographers. Such practical demonstrations could have been more numerous. They do much good.

Mr. J. W. Bryant, Laporte, Ind., devoted a large space to the exhibition of his new backgrounds and accessories. Besides those of a general character, he had twelve styles of what he terms the "Vignette" background—a light background with some curling forms of flowers, or shapeful sprays of leaves, so arranged in black color as to break up the monotony of the shading in the picture. They were exceedingly pretty and tasteful, and a variety should be in every studio. The "Balloon" series of backgrounds was also a novelty. But to us the Bryant "Background Easel" seemed a most useful article. On a well-weighted stand, on casters, an adjustable frame is contrived, which grasps the background of any size, and holds it upright. Then the whole can quickly be removed from one

place to another, and a change of background made just as quickly. We wonder that some one had not contrived such a useful thing before.

Mr. G. Gennert, 54 E. Tenth street, New York, was represented by his son, who made Dr. Byk's famous hydrochinon and the extra-brilliant "Eagle" papers the first subjects of his earnest endeavor to bring the best of requisites to the attention of the craft. Mr. Gennert has worked most industriously to improve the quality of the albumen papers and chemicals which come to us from the Fatherland, and has made himself a public benefactor, while he has created for himself a wonderful business.

The A. M. Collins Manufacturing Co., Philadelphia, seem to have exceeded all of their former beautiful exhibits in their display at Minneapolis. Underneath a large canopy was a transverse erection, the eight sides of which were completely covered with a bewildering collection of all the imaginable styles and shapes and colors of cardmounts for photographers. With this delicacy of tint, variety in form, multiplicity of size, and endlessness of design, all gold glittering, to choose from, there is no excuse for any photographer using either ugly cards or cards of bad quality. The only difficulty is to choose. This beautiful exhibit was in charge of Messrs. Hastings and James, and the arrangement, or, "architecture," as Mr. Hastings called it, was due to the taste and skill of Mr. James.

Messrs. C. H. Codman & Co., Boston, represented by Mr. Roby, made their new Orthopanactinic Lenses the chief feature of their exhibit. A steadily growing demand for these lenses makes it difficult for the manufacturer to get any supply ahead. Wherever they go they win favor.

Mr. John Carbutt, Philadelphia, was not present in person, but the large number of fine productions labelled "made on Carbutt's plates," would have delighted his heart if he had been present. He was known by his works, and well and favorably known, and not to be looked upon entirely as an "eclipse."

The Hawkridge Manufacturing Co., Hoboken, N. J., have come up to us through the "Flash Light," and their "Actinic Pocket Lamp," and "Non-explosive Pistol," met with a great deal of favor with all bromide enlargers and nocturnal photographers. The advantages of safety, portability, and *plenty of light*, offered by these new powers, will make them very helpful.

Thus much for the department of supplies. Much money was expended by our enterprising advertisers to make their showing at Minneapolis, but so small was the attendance that few of the dealers realized sufficient to repay the sums turned over to the P. A. of A. treasurer for space. But their wares continue to be made known through the medium of our pages—after all the best possible, because the most far-reaching, way—and their reward will come yet.

If we all live to see Boston, we shall see every former exhibition eclipsed, both in the line of pictures and in the direction of articles useful for the production of pictures. Meanwhile, adhere to the veteran magazine, consult its pages carefully and regularly, and you will be kept *thoroughly* informed upon all that is of value to you in keeping up with the growth of our art, and in your efforts to *prepare for Boston.*

PROGRESS OF PHOTOGRAPHY.*

BY W. H. H. CLARK.

I WILL be as brief as possible, endeavoring to make myself heard by the farthest member in the hall; therefore, what I lack in enlightment I will endeavor to make up in noise.

Photography may now be divided into several distinct departments—portrait photography being confined to professional artists who earn their living by their business.

Landscape photography, followed by professional photographers and amateurs.

Scientific photography, practised, for the most part, by salaried men, but quite freely indulged in by amateurs; micro-photography, properly included under the above heading, and stellar photography, which is directed to the object of discovery in the realms of space, heretofore explored only by

* An abstract of the report read at the Minneapolis Convention.

the telescope and mapped by drawings made by hand.

Stellar photography has made considerable progress; the governments of the world have taken it under their patronage, and we may look for wonderful developments in this direction, or at least our great, great, grandchildren may. There will be placed in observatories, in different parts of the world, ten instruments of about eleven inches in diameter and about twelve feet focal length for the purpose of photographing and mapping the heavens; when the parts are placed together the whole will comprise a complete photographic map of the starry universe. As these instruments will be controlled and operated by men of undoubted zeal and ability great things are hoped for.

Orthochromatic photography has made some advance, yet not so great as it should have done, or that it will do in the twelve months to come; photographers have been slow to appreciate its great advantages. Orthochromatic gelatine dry-plates are now on the market possessing good keeping qualities and of extreme sensitiveness.

Dr. Albert, of Munich, publishes a formula for orthochromatic collodion emulsion, which is said to produce plates as sensitive as any gelatine plates now on the market, of easy preparation, and can be used wet or dry. Should all this prove upon trial what is hoped for it, photographers can have the pleasure and profit of making their own plates as in the old wet-collodion days.

Plates prepared orthochromatically are invaluable for many purposes, and desirable for all.

In the direction of photo-mechanical printing there is little progress to record so far as quality is concerned; the proofs of to-day are but slightly in advance of a year ago; but there is a marked improvement in the demand for this class of work. As the demand increases the quality will also increase, and uses will be found for them not thought of at present.

Eastman's stripping films have been introduced, which have nearly if not quite superseded paper for negatives, and which obtain a very great advantage in photo-mechanical printing.

I can report no progress in portrait photography. The suicidal policy of price-cutting, adopted by the leading and well-to-do galleries, to kill out their poorer neighbors has produced evil effects, and poorer work is the result.

Instantaneous photography at night by aid of artificial light has many devotees, and not alone among amateurs. Magnesium in some form or other, has been the main source from which the light has been obtained, and many and varied are the devices put upon the market for flashing the powder. Of late a new candidate has made its appearance, which bids fair to out-rival all others. I refer to the nitric-oxide gas flash, of which mention has been made in the different journals. It produces no smell or smoke.

Diffraction photography, the name given by Dr. John Vansant to photography without a lens, is receiving considerable attention, and is destined to prove of great value in the arts and sciences.

Photographic Objectives.—Two recent improvements in this line are by Messrs. Voigtlander and Dallmeyer. The former having constructed a new portrait lens, one of the chief merits of which is that it is absolutely rectilinear, and is said to be the first rectilinear portrait lens ever placed upon the market. The glasses of both front and back combinations are sealed, so that all diffusion and loss of light by reflection is successfully overcome. The focus is longer than heretofore, which enables the operator to pose his sitter further from his instrument than has been his wont, thereby securing portraits which excel in correct and faithful reproduction of the features, brilliant and equalized illumination, true perspective and perfect difinition, together with that round, soft, stereoscopic effect which delights the eye of every true artist.

Photographers who do much at viewing have observed the fact that while their single lens would give fine, brilliant negatives of forest, rock, and river views, architectural work required a different instrument.

Thanks to the advance made in the construction of photographic objectives, one lens will now accomplish all the above to

the entire satisfaction of the most critical, Mr. Dallmeyer having invented and placed upon the market a single lens which is absolutely rectilinear, producing great brilliancy and no "lapping lenses."

In this new lens, the concavo-convex and one meniscus are fitted together, while the second meniscus is reversed, so that a double convex space (if such a term is admissible) is left between them. The lens sets back in the tube with the diaphragm in front; the angle is about 69 degrees.

Developers.—Several new substances are being put forward for developing the latent image on the exposed plate; foremost of which appears to be hydrochinon, as that chemical possesses good keeping qualities and is energetic to the last drop. We may look for it to become a general favorite; another thing being in its favor, that it can be prepared and used as a one solution developer, preparations of the kind being already upon the market. It will be well for photographers to give hydrochinon a trial.

Self-developing dry-plates are now manufactured, upon the backs of which is a coating of some kind that holds a prepared pyro-developer, therefore, all that is necessary after the plate has received the proper exposure, is to immerse it in a dish of pure water. Of the practicability of such a mode of working I am a little skeptical.

Photographers having learned how to better fix their negatives, there is less complaint of deterioration, and more durable negatives are the result.

Plain Paper.—There is a tendency among photographers to return to the use of plain paper for contact printing, in order to do away with the so-called inartistic polish of the albumen surface. It is more strongly advocated in foreign countries, and more largely practised. Albumen paper, however, will continue to be used, at least, for another twelve months.

The Metric System.—Although not alone pertaining to the progress of photography, yet it is a subject agitating the minds of the fraternity the world over, and many of our best formulæ are published in that system; therefore, a remark or two upon this subject may not be out of order. While I shall not advocate either the metric or our own system of weights and measures, still there is great room for improvement in the latter.

A commission has been appointed to meet in this country for the purpose of adopting some means whereby the metric system shall be put into more general practice in the United States. Said commission will meet some time during the present year. Perhaps it would not be out of place for this convention to give expression upon this subject.

Schools for Photography.—Germany has taken the lead in establishing schools, or more properly speaking, colleges of photography. One in Berlin, in charge of Dr. H. W. Vogel, and another in Vienna, in charge of Dr. Eder. These colleges are supported by the government; the price of tuition being very small. Large and handsome buildings have been erected for the purpose, containing departments for every branch of the photographic art, where pupils can secure a thorough practical, as well as theoretical, knowledge of the business in all of its branches, or those only, he or she may elect to study and practice.

It is to be hoped that some influence will be brought to bear upon our own Government, whereby some of the surplus millions now in the treasury might be applied in the same direction.

The photographic journals remain about as they were one year ago, shedding abroad their light among the hive of workers, that all who wish may improve themselves.

PHOTOGRAPHY AS A FINE ART.*

BY ENOCH ROOT.

Do photographers, as a class, realize what a wonderful and beautiful profession they are engaged in, what capabilities, progress, and possibilities are found in this most fascinating art-science? Where is there its equal in the whole range of earthly pursuit? Comparatively of recent birth, not a year passes that some new and astounding discovery of its use is not promulgated; and this is not confined merely to pictorial rep-

* Read at the Minneapolis Convention of the P. A. of A.

resentation, but running through the whole range of the arts and sciences. Where will its advancing steps be arrested? None can tell; but we may confidently look forward to continued progression into new fields of usefulnes and beauty yet unexplored.

But the crowning glory of its future, whatever else may follow, the one element that is to give grandeur and dignity to its pursuit are concealed in its art possibilities. It, therefore, behooves the craft in devoting all due attention to its technique, not to neglect so essential a feature of their progress as the æsthetical. It is only by this means that the true position of photography as a fine art can be claimed and maintained. That so many persons are disposed to deny the attribute of art to photography is chiefly owing to the apathy and insensibility in this respect that exists among such a great number of the artisans of the profession, who pay scarcely any heed to its purely artistic expression.

Mere manipulative skill in producing highly-finished work is not art, although a most desirable and praiseworthy requisite in obtaining the favor of the general public. But that public is becoming day by day more cognizant of other desirable qualities, and the time is not far distant when fine polish and excessive characterless retouching will no longer serve to conceal awkward posing, bad lighting, and inartistic arrangement.

Who among our photographers are alive to this awakening? Of the hundreds who yearly leave their business to attend these conventions, or, obliged to remain at home, take an interest in the proceedings through the various reports, there is much to hope from; they are at least in the line of learning the needs of the present and can foretell those of the future. But how about the other large army of fellow-workmen who exhibit no interest in this society devoted to their advancement, and, as a rule, scarcely ever read any of the most excellent and instructive photographic periodicals, which contain so much information that is essential to the success of a live photographer? These are among the class that argue that even though they should make their work more artistic, it would not be any better appreciated. Why waste time in giving a quality to work, from which no pecuniary advantage is to be derived? But is there no such incentive as pride, dignity, or satisfaction in superior work, aside from the amount of money it will produce? Your patrons may be among those that a good likeness will satisfy, although it may be false in almost every other respect. But how about yourself? Are you satisfied? If so, it is idle to waste words in your interest.

To succeed exceptionally in any profession, one must become something of an enthusiast. But this must be turned to some practical end. If you love your profession, make a study of it in all its bearings the aim of your existence. Turn all your leisure moments to reading, not only all the purely photographic literature, but extend it into the field of art, even if it embraces subjects that seemingly have no practical connection. Seek inspiration in such writers as Ruskin and Hamerton, your light reading with such novelists as William Black, and practical knowledge in such books as Burnet's *Art Essays*. Learn all the principles of art contained in the study of composition, light and shade, invention, arrangement, form, harmony, unity, perspective, etc. In these are contained the secrets of successful posing, grouping, lighting, accessories, and the various component parts that make up an artistic photograph. Remember that to make a fine art of photography, all this knowledge is indispensable. Its artists must have as perfect an understanding of the general principles that underlie all high art as is required by successful painters and sculptors. In other words, they must possess all the theory of the latter, and in place of their necessary skill with the brush or modelling tool, the photographer must have an equal proficiency in the use of the camera and developing tray.

We admire the dexterous ability of a proficient draughtsman. It demands a long, severe training of the eye and hand to acquire superior attainment. Yet drawing without thought or feeling is no higher in rank as an art than the use of the camera. Neither, in themselves, are more than mechanical arts. They are simply the artist's tools, the means to an end, the words by

which the language of art is conveyed, and not the thoughts to be expressed. A mere copy by imitation, either with the brush or lens, might be perfectly accurate, and still be a very low order of art. But when artistic knowledge and judgment are used in the arrangement and selection of the most expressive, and rejection, as far as possible of the least important and objectionable features, when the artist is inspired by love and feeling that is so guided by knowledge as to impress a personality upon his work that marks its superiority, then, no matter how humble the means, it embodies the elements that constitute a fine art, whether it be found in a photographic print, the wall paper of a Morris, the coarse clay of the potter of Tanagra, the glassware of Murano, the metal work of Benvenuto Cellini, or the canvass of a Titian.

In claiming art in photography there is no denying that it has serious limitations. It is sadly hampered in the direction of selection, rejection, invention, and in the means of technical execution. It would be as absurd to insist for it a capacity of expression in the highest realms of creative and imaginative production, as to deny it any adequate art capabilities. Yet its confines lie very near and will encroach in the future more and more upon the province of the inventive spirit, although from the nature of its execution, its greatest triumphs will ever remain in a realistic presentation of nature. Its appeal to the love of the beautiful and the higher sentiments, must be through an artistic representation of facts rather than to a stimulation of the ideal. But is not this in accordance with the growing spirit of the age? Has not classicism and romanticism been obliged to give place to naturalism both in literature and art?

Because the photographer is confined to a narrower field than the painter, is he to be denied the title of artist, when, by a display of the same power and knowledge as the latter, he produces artistic results? Granting that the great majority of photographs produced throughout the country are not works of art, but are the thousands of crude daubs called oil paintings, that are hanging on our walls, any more entitled to that appellation? Decidedly, no. They are not even respectable company for the children of Daguerre. As poor as are the productions of some photographers, any of them are eminently superior to such trash, inasmuch as a mechanical production of the camera must have some semblance to nature, while a mechanical painting seldom has any resemblance to anything celestial or mundane.

But, with all the difficulties above enumerated, the photographer has some compensating advantages not enjoyed by the painter. The latter, in order to express something more than the broadest truths of nature, must devote much time and severe labor to the elaboration of details. Thus the happy inspiration of a moment is often lost in days of tedious manipulation. But the photographic artist has only to place his model in just the right light, secure a graceful pose, arrange his accessories with due regard to the composition, determine the most harmonious lines for the draperies, and watch for a favorable expression (all of which require the keenest artistic perception and knowledge), and then the mechanical lens almost instantly fixes his conception. Here is no time for shifting lights, disarranged draperies, or tired, worn expression.

Then, with the enthusiastic landscape photographer, in his search for the picturesque, how often does his artistic instinct discover beautiful views already composed by nature? Perhaps he may have a short time to wait for certain shadows to lengthen, or lights to fall into masses, so as to bring unity and breadth into his composition, or he may spend a time in search for the most favorable location for his camera, so as to embrace a foreground that will harmonize with the distance. But, this obtained, the faithful sun-god speedily records it upon the sensitized plate.

The landscape painter who wishes to obtain a transcript of this same scene, follows precisely the same governing rules in his selection. He seats himself at his work. An hour is spent in making a rough sketch, and he begins to use his colors. In the meantime, a constant change has been in operation in the view. The lights and shadows have assumed new relations to each other. It is no longer the picture that first attracted admiration. Its superior pictur-

esque effect has departed. The artist is now working from memory, and even this is confused by the new, ever-changing view presented. If he wishes to obtain anything like a finished study, he must spend several days in working here for a short time at the opportune hour.

A week of cloudy weather may intervene before the arrival of another such a day when the effect is similar.

In the meanwhile the photographer has continued his rambles. A mass of flying clouds sweep across the heavens in an "innumerable multitude of forms," or by the restless sea the long undulating waves sweep majestically in upon the beach, or break into an infinitude of life and motion upon the resistful rocks. . . . . Snap! and another prize is won from nature's domain. How much of this flying movement of vapor or wave could the painter have seized? In fact, it is by instantaneous photography that the present pictorial representation of the moving forms of the sea and sky have been rescued from the conventional symbolism of the past, and their wonderful phenomena produced with so much of their real life and character.

In this necessarily brief paper, the full importance of the subject can barely be touched upon, but there are very many cogent reasons, that cannot now be enumerated, why it should receive more universal attention. Suffice it to say, that, if the photography of the future does not attain a more worthy and high position as a fine art, it will be owing more to the neglect of its devotees, than through any failing in its art capabilities.

NOTICE.—The other papers offered at the Convention, together with notes, news, and comments, will appear in our next number, and thus complete our report. We shall be glad to have any omissions reported to us *at once*.

PHOTOGRAPH OF THE SUN AND WEATHER PREDICTIONS.—One of our journals relates that the photographs of the sun, taken daily at Prague by Professor Zenger since 1877, have proved very useful in making meteorological reports and predictions regarding the weather. In these prints are often seen circular or eliptical rings, white or gray, around the disk; sometimes these zones, as they are called, spread over the disk itself, and impart to it a grayish appearance. Observation has shown, since several years, that these zones are more dense and more wide spread before the electric or magnetic storms at the surface of the earth, and they enable the prediction to be made of a coming storm. It is evident, therefore, that the cause of this appearance on the photographic plate is to be found in the terrestial atmosphere. According to the author these zones indicate a storm twenty-four hours in advance.—DR. PHIPSON.

THE ENAMEL PROCESS OF MR. REINHARDT.*

DEAR SIR: On my return from the country, I found yours of the 8th inst. I have myself been troubled with having the photos stick to the glass, while enamelling, but have eventually overcome it. In the first place it is necessary to use collodion made with good alcohol and ether; I use five ounces of each and seventy grains of gun cotton. The plates should be *at least* a half inch wider than the picture, and one inch or more longer, for this reason: To squeegee the picture and the paper down on the plate it is necessary to hold the paper in its place by pressing down on it with the fingers, but these should not touch also the picture below the paper. Therefore, by having both the plate and the paper longer than the picture, it leaves a margin sufficient to hold it in place without exerting any pressure on the picture; it appears that by pressing down the fingers the collodion film is displaced and allows the gelatine to come in contact with the plate and, of course, causes it to stick. Since I have observed this precaution I have never had any trouble.

Hoping that this may be of some use, I remain truly yours,

LOUIS REINHARDT.

SAGUA LA GRAND, CUBA.

* See Philadelphia Photographer, No. 320, page 235.

Editor's Table.

A Handsome Thing To Do.—It is not often that we find a contemporary embellishing his number with the portrait of another contemporary, or devoting several of his pages to a review of his co-worker's acts. And yet we find both these things gracefully done in the *Photographic Times* of the issue of July 6th, wherein the portrait of the editor of the Philadelphia Photographer appears as the frontispiece made from the last negative of him, by Kurtz, followed by a long list of the deeds and misdeeds of the aforesaid individual, prepared by our generous young co-laborer, W. I. Lincoln Adams, Esq., assisted by the excellent memory of his distinguished father, W. Irving Adams, Esq. It is a tribute we accept gratefully, and it will be one of the brightest spots of all this happy year twenty-five of our service in the editorial chair devoted to the art we love.

Messrs. Hunter Bros., Taunton, Mass., have favored us with a number of cabinet portraits which are very fine in production and finish. They seem very deft in the management of their light, and, surely, as they print it upon the back of their cards, so it is the fact, that with them "Instantaneous photographs of children" are "a successful specialty." Two pictures of a spleeping child with a great Newfoundland dog, are especially excellent. All are good.

Amsterdam Views.—A fine collection of street, park, and garden views of the quaint and beautiful city of Amsterdam, have been sent to us by Mr. J. J. Kampe of that city. They are printed on chlor-silver gelatine paper, prepared by Obernetter—toned and fixed in the same bath. They are extremely lovely and are finished with a very high surface.

Correction.—Please correct the formula in my late note, which, by some mistake, reads thus: (See page 420), No. 1. Water, 32 ounces; it should read, Water, 40 ounces. Jex Bardwell.

Died.—In Waterford, on Tuesday, July 17, 1888, Annia Olivia, wife of Hezekiah McMichael, of Buffalo, N. Y., aged 43 years, 2 months and 19 days. "Funeral from the residence of Wm. McMichael, Esq., Main Street, on Thursday, the 19th inst., at 10 A.M., to Greenwood Cemetery, thence to the Baptist Church for services. Friends and acquaintances will please accept this intimation."

Scarcely had our good friend, President-elect McMichael, returned to his wife, flushed with the well-earned victories gained at the Minneapolis Convention, ere he was obliged to part with her forever. We are sure that all who know him or know of him will join us in sincere sympathy for him and his two children.

"The Old Guard."—This is the title of a new composition picture just completed by Mr. D. H. Anderson, 785 Broadway, New York. Over two hundred figures are included in this master group of our talented artist, composed of gentlemen who are mainly from the highest circles of business, and are members of that distinguished body. With their attractive uniforms, posed in conversational groups here and there scattered about the vast armory, Mr. Anderson has made a wonderful composition. There is not a stiff or unnatural attitude in the entire picture, which, even with the careful study that has been given it, is a marvel. Wonderful effect has been given to the interior perspective by the artistic arrangement of the groups, and the entire composition is full of lightness, softness and harmony. We look upon this as far excelling Mr. Anderson's former pieces "The National Guard" and "The Veteran Firemen." It cost him a deal of labor, and we hope it may bring him a rich return. The original is 4½ feet by 7 feet in size and the copies about 30 x 40 inches.

What *Quarter Century* Does.—"I received your *Quarter Century* on Friday last. It is just what I wanted, and I wonder how I did without it so long. It should be in every studio and I shall try to introduce it wherever I go."—Joseph Sparien, Elyria, Ohio.

Every prudent husbandman, while not neglecting his older trees, is very careful to encourage and nurture the young growth. All helps, and we should help one another.

The Chautauqua School of Photography.—Prof. Chas. Ehrmann has been at his post at this growing school, for over a month. In his letter to the *Photo Times*, he says:

"I have opened the School of Photography under the most auspicious circumstances. We have become immensely popular with all our people, which is shown by every one of the

many visitors we daily entertain. The superintendent of the grounds has furnished the main school-room with a sky-light, that will supply the long-felt want in regard to instruction in portraiture; thorough repairs have been made, and the house has been newly painted, which gives a splendid aspect to our otherwise modest structure.

"Scholars report themselves now in large numbers, and as soon as proper arrangements with other departments have been completed, there is no doubt I will have a large class." Good.

"*The Camera*, edited by Mr. T. C. Hepworth, who is favorably known to American readers by his interesting London Notes, in the Philadelphia Photographer, is only less popular in this country because, on account of its more recent start (now in its second volume) it is less known. But it is steadily growing, and surely receiving, in America, the support which its manifested spirit of progression, of fairness, and primary purpose to instruct and help, so well deserves. We are gratified to see evinced in the younger photographic periodicals of Great Britain, a spirit which will as surely lead them to a prosperous and useful career, as its opposite always results in loss of popularity and ultimate ruin." *Photo Times.*

Our admiring readers of Mr. Hepworth's "Notes from London" will be pleased to know of his appreciation among our contemporaries.

The Photographic Instructor, for the Professional and Amateur, being the comprehensive series of practical lessons issued to the students of the Chautauqua School of Photography. Revised and enlarged. Edited by W. I. Lincoln Adams, editor of the *Photographic Times*. With an appendix on the nature and use of the various chemicals and substances employed in photographic practice, by Prof. Charles Ehrmann, Instructor of the Chautauqua School of Photography. New York: Scovill Manufacturing Co., Price, paper cover, 75 cents; Library edition, $1.25.

It is not always that the caterers, for photo-literature gourmands "hit" it in the choice of publications issued by them. But this new book with a comprehensive title and a low price, is bound to be a "hit." In other words, it will prove a very acceptable publication, as the introduction truly states: "The series of lessons which follow this, are written more especially for those who know little or nothing of the charming art of photography, yet who desire to be taught its mysteries by easy, simple methods, leaving for later study the whys, the wherefores, the chemistry, the science." And they fully come up to the mark. Messrs. Hull, Spaulding, Klauser, Carbutt, Mason, Miller, Adams, and Ehrmann, have done their best to produce a practical, useful hand-book. No department of the work is left out of the line, and every one is so carefully attended to that it must fit right into the right place whenever or wherever wanted. *All* is good, but Dr. Ehrmann's "Appendix" will be found particularly useful. The embellishments of the book are a full-page view "At Chautauqua," and another of Dr. Ehrmann as he is seen "At Work" by his pupils at Chautauqua. The work contains over two hundred pages, and is gotten up after the beautiful style of its predecessors in "Scovill's Series."

OBITUARY.

Candida Baratti, widow Podio, with her son Carlo, Maddalena Peretti, widow Baratti, with her children Ottavio, Saturno, Guiseppe, Federico, Luisa, and Clotilde, with the most poignant grief announce the irreparable loss of their well-beloved brother, brother-in-law, and uncle, Cav. Uff. Ottavio Baratti, Lieutenant-Colonel, retired, in the seventy-fifth year of his age. Having received the consolations of our holy religion. Piverone, June 15, 1888. Pray for him. The funeral will take place at his house.

[The publication of the above notice, received from his saddened family in Italy, is the last thing we can do in honor of our beloved contemporary. When, in 1864, we began our career as a magazine editor, he edited an Italian monthly, called *La Camera Oscura*, in Milan. He at once wrote us a cordial welcome into the ranks, and ever since has been the warm-hearted, noble, generous friend. During our first visit to his sunny country, though many years his junior, he was most profuse in his attentions. We meet a sad, personal loss in his demise. He was one of the earlier amateurs, and did much toward photographic progress, notably in the improved coffee dry-plate process. But, being of a sensitive nature, the contests which accompanied his work then drove him from it, and he resigned his post. He lived the easy life of a gentleman, in the country, but held his interest in our art. We were regular correspondents for nearly twenty-five years. Alas! how we mourn and miss him.—Ed.]

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.

For Sale.—At a bargain. Best gallery in a city of 15,000. Good trade, good prices, and cheap rents. W. B. Glines,
Hutchinson, Kansas.

For Sale.—The only gallery in a flourishing town in Mississippi. For sale cheap. Satisfactory reasons for selling. Apply to
W. D. Gatchel,
Louisville, Kentucky.

For Sale.—One of the best equipped galleries in the State; doing a good business; do a big summer trade, and have fine country surrounding a town of 20,000. Own half of building. Reception-room on ground-floor. Operating-room 21 x 40; large (north) light. Large printing, dark, and toilet-rooms, all finely furnished. Make 16 x 20 direct work. Everything new. Will sell complete, for small amount. Address,
"Photographer,"
Box 5, Rochester, N. Y.

Wanted Immediately.—Young lady who can retouch, print, tone, and assist in general. State salary. C. F. Cook,
Wilkesbarre, Penna.

A hollow stationary burnishing tool will scratch photographs just as quick as a solid one. The Quadruplex Enameler can't scratch, because the burnishing tool rolls with the picture. The Quadruplex is the King of Burnishers.

$500 will buy a well-established gallery, doing good business in the Queen City of the oil regions. Those meaning business may address
"Photographer,"
Box 562, Titusville, Penna.

For Sale.—One-half or whole of the finest photographic gallery in the city of Detroit, Mich. Best prices and work. For particulars, Address,
246 Woodward Ave., Detroit.

For Sale.—Good 8 x 10 double combination portrait lens (patent), for seventy dollars.
"W. J."
Y. M. C. A., Buffalo, N. Y.

You will get fooled if you buy a burnisher with only 2 cog wheels, thinking it "as good" as Smith & Pattison's Quadruplex Enameler. The Quadruplex is the King of Burnishers.

STOLEN—LOOK OUT.

Euryscope lens, Size 3, Number 25,338. Please keep my address and this number, and if it is ever presented to you for barter or sale, inform me immediately and hold lens.

E. P. Miller,
Waverly, Ohio.



VIEWS

reproduced in this popular form, at lowest prices, from prints or negatives.

A. Wittemann,

60 Reade St., N. Y.

TO PHOTOGRAPHERS.

Dear Sir: I beg leave to make you the following request: I am the unfortunate, forsaken wife of the photographer, Franz Hohmeier, who left me last winter on the 21st of January, in the most distressing condition. Only since my marriage with him have I known of his cheating, thieving, and swindling, and in spite of the warning in the *St. Louis Photographer*, he continues to pursue his criminal trade under false names, now here and now there. In May he was in Baltimore, 214 North Charles St., with Mr. Blessing, under the name Schumann; at present he is in Richmond, Va., under the name Meier. I have learned that he has deserted another wife and two children, likewise in the most pitiable condition. I have heard the Convention takes place on the 10th and 13th, would it not be well, therefore, for you to bring this matter up for discussion, so as to lay bare the work of this dangerous man, and make it so that he can find no more work. He molests me constantly with scurrilous letters, in which he derides and insults me. I believe this would be better than all the warnings of him given in the photographic journals. Mrs. Hohmeier,
7 Blossom St., Boston.

PHOTOGRAPHERS ATTENTION.

I have on hand a new lot of backgrounds, latest designs, exterior and interior scenes; all first-class, for less than New York prices. Any scene gotten up to order on short notice, at the following rates:

6 x 8 feet.....	$5 00
7 x 8 "	6 00
8 x 8 "	7 00

Remember that this is the only first-class establishment of the kind in the south. Address, cash with order. D. B. ALDRICH,
Mt. Airy, N. C.

FOR SALE.—At a bargain, A No. 1 photograph gallery, doing a good business. Over 25,000 negatives on hand, that are being largely ordered from. Good reason for selling. Good chance for a smart man. Address,
"BURRELL," 357 Westminster St.,
Providence, R. I.

1878. 1888.
SAMUEL G. NIXON,
Artist,
154 North Ninth St., Philadelphia, Pa.

Photographic enlargements furnished and finished in Crayon, Ink, or Water Colors.

Send for 1888 reduced Crayon price list. Highly finished work at low prices. Will alter pictures after delivery, if returned.

A PHOTOGRAPH is liable to stop in the burnisher if the tool is stationary, no matter whether it is hollow or solid. It can't stop in the Quadruplex Enameler, because the polishing roller travels faster than the picture and helps it through. The Quadruplex is the King of Burnishers.

FOR SALE.—As they are, six direct solar cameras, 14 inch condensers; will print up to 25 x 30. Lately in use at Albert Moore's. Also a library of photographic books. Cheap for cash. Address,
W. L. SHOEMAKER, Phœnixville, Pa.

Try Richardson's Glacé Lubricator.

FOR SALE.—One photograph wagon, which was formerly used as a dark-room. Has enclosed steps in back.
PACH BROS., 841 Broadway, N. Y.

ADT'S PATENT PRINTING FRAME.—The printing frame of the future. Considering the construction of the Back-board, the Patent Tally, and the Elastic Felt Pad, the Adt Patent Printing Frame is the cheapest and best in the market.

	PRICES.		
3¼ x 4¼	$0.50	6½ x 8½	$0.75
4 x 5	50	8 x 10	85
4¼ x 5½	50	10 x 12	1.15
4¼ x 6½	60	11 x 14	2.15
5 x 7	65	13 x 16	2.40
5 x 8	65	14 x 17	2.80

When made with backs to open lengthways, an additional charge of ten per cent. will be added to the foregoing prices.

Now in stock.
GEORGE MURPHY,
2 Bond St., New York.

VIOLET LIGHTNING FLASH.—(Brutum Fulmen.) This compound is made by a new formula, and produces the most powerful actinic light yet discovered. It contains neither acid, chlorate of potash, nor animal charcoal. It oxygenizes more rapidly than any flash compound heretofore offered, and may be used on card-board or glass with safety.

Twenty grains is quantum sufficit for an ordinary flash (instead of forty to sixty grains, as stated on our copyrighted directions). According to subject, distance, quality of lens and rapidity of plates used, vary the above quantity. A twenty-grain measuring-cup is sent with every bottle. Handle with care.
BUCHANAN, BROMLEY & Co.,
Manufacturers,
Philadelphia, Pa.

IT is a pleasure to know that all of the best photographers in the city of PHILADELPHIA are using Three Kings Albumen Paper. Price per dozen, 90 cents; per ream, $32.00; second choice, per ream, $24.00.
BUCHANAN, BROMLEY & Co., Importers,
Philadelphia.

CARBUTT'S ECLIPSE PLATES.

A word or two as to the "Eclipse" Plate: with the "Eclipse" Sen. 27, I have made better work than ever before. One charm is their exceeding brilliancy and great rapidity, giving full detail with Prosch rapid shutter, diaphragm *f*24. The negative is very like the best class of old wet-plate in its quick printing characteristics. CHAS. WAGER HULL.

NEW YORK, July 9, 1888.

A SECOND EDITION

JUST RECEIVED FROM ENGLAND,

PROF. W. K. BURTON'S NEW BOOK,

Practical Guide to Photographic and Photo-mechanical Printing Processes.

Price, $1.00.

MARION & Co., Publishers, London.

The well-known author says, "The object of this work is to give practical instructions in the working of all processes which are in actual everyday use at this date."

The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

Copies mailed on receipt of price.

EDWARD L. WILSON,
853 Broadway, New York.

FOR SALE.

1 Imperial photo press, R. Hoe make, in good order	$25 00
1 7 x 10 Press, good order	10 00
1 12 x 15 Rubber Bath Holder, air-tight top	3 00
1 15 x 19 Rubber Bath Holder, air-tight top	4 00
1 15 x 19 Glass Bath Holder	6 00
1 16 x 20 Glass Bath Holder	6 00
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NASHUA, N. H., March 13, 1888.

E. K. TALCOTT, ESQ.

DEAR SIR: I desire to express my unqualified satisfaction with your very superior Patent Glass Mount. It almost invariably calls forth loud praises for its beauty, brilliancy, and novelty, from all whom I supply, and its undoubted durability makes it a valuable acquisition.

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NEW SULPHITE OF SODA (Crystallized).—Price: In 5 pound cans, $1.00, 1 pound cans, 35 cents, ½ pound cans, 25 cents. For sale, wholesale and retail, by

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WANTED.—The *live* photographer everywhere, to issue special-rate photo. checks in combination with our *glass tablet photo mounts*. Is new; takes at once.

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EDWARD L. WILSON, the well-known and popular Photo-Book Publisher, of No. 853 Broadway, New York, has just issued a very valuable and important work on Photo-engraving, Photo-etching, and Photo-lithography. The publisher and author claims the book treats "mainly upon an entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them." It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Mr. Wilson's own contributions and translations from the French and German, make the new book very thorough and practical, and also make the whole of the processes very plain. The book is 6¼ x 8¼ inches, illustrated, 180 pages, and cloth bound; price $3, post paid, and is divided into the following departments:

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed.

Since the demand for photo-engravings from newspapers, magazines, etc., is each day growing greater and more imperative, it behooves those who desire to become skilled in this fascinating process to secure a copy of the new work.—*Lithographer and Printer.*

THE KING OF BURNISHERS.—The Quadruplex Enameler is gaining ground every day, they are being ordered from all parts of the world. Conservative photographers who bought small ones to try, are now ordering large ones. You make a great mistake if you buy a burnisher without thoroughly investigating the merits of the Quadruplex, manufactured by SMITH & PATTISON, 261 and 263 State St., Chicago.

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The *Photo Times* says: "The second edition, rewritten and enlarged, of this popular handbook for crayon artists, has recently been issued. The first edition of this book being small and published rather as an experiment, many important points on the subject had to be treated briefly. But that edition meeting with such a warm reception and selling so rapidly, the author resolved to enlarge the second edition and give his readers the benefit of the knowledge which he had since gained of new materials and a fuller description of his methods of handling them. The little work treats solely of bust and vignette portraits, and its aim is to assist young artists who are struggling alone beyond the reach of competent teachers. After an introductory confidential chat with the students, we have chapters on the Solar Print, Crayon Materials and How to Prepare them; the Crayon Print, Interlining and Retouching; Hair and Beard; Drapery; Background; and Concluding Remarks." It is the best.

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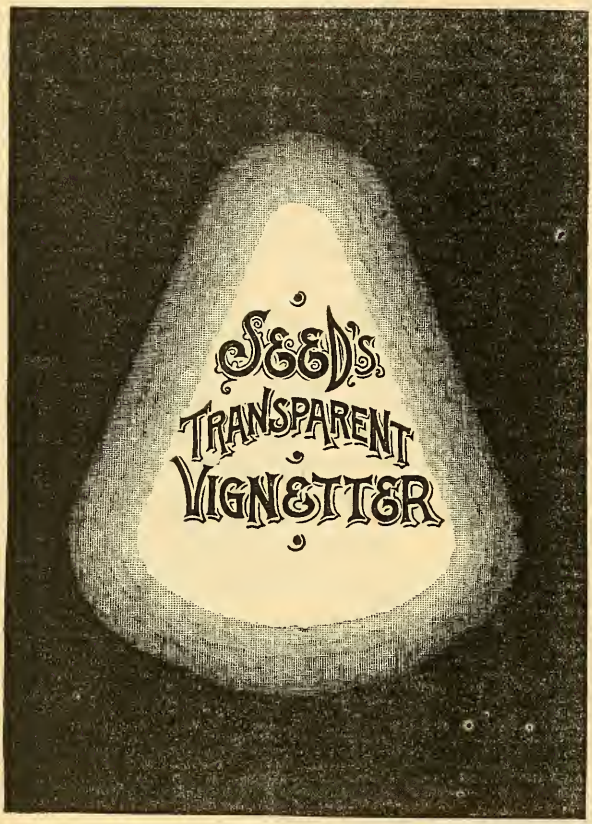
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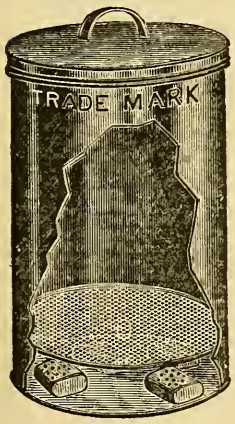
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The sensitized paper preservative when used in the tin apparatus is a great success. The paper keeps in perfect condition for two or three weeks. Instead of silvering paper every morning as heretofore, we now silver large quantities at a time and use it as required, thereby saving great loss, by paper spoiling before we were able to print it. You certainly are entitled to the thanks of the fraternity for this valuable discovery.

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FOR PHOTOGRAPHS, ETC.

IS NOW MEETING A LONG-FELT NEED.

A unique invention constituting a picture and frame combined, complete for the easel, mantel, or wall, by which all framing may be dispensed with.

Patented March 23, 1886.

The Talcott mount softens the lines, adds much strength and great brilliancy to the picture, preserves the photograph, rendering it practically indestructible. Picture frames are expensive, go out of fashion, and take up room, A picture mounted by our patent mount can be displayed or packed in one-half the space required by a picture with ordinary framing, as by this process all other framing becames wholly unnecessary, yet it is so constructed that, if desired, it can be placed in any ordinary picture frame, intact, and free from all interference.

Our invention relates to mounted pictures, such for instance, as a photograph; the object being so to mount the picture as to dispense with the ordinary picture frame, to preserve the picture, and to secure a richer, stronger, and more brilliant and life-like effect than has been heretofore produced by ordinary modes of mounting, and to afford, when so mounted, means for support and suspension of the same. The transparent plate is of the best quality that can be procured, shaped, and finished to each individual print, which print is securely enclosed and hermetically sealed in a neat and durable manner. The mount is provided with a strong suspension and support, the whole presenting a finish and richness to correspond with any surroundings, however elegant.

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E. K. Talcott: We have supplied a large number of our customers with Talcott's improved glass mounts, and they have invariably expressed the utmost satisfaction with the same. In our own judgment preservation of photographs these mounts are invaluable.

Notman Photo. Co.
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Desiring to test practically the Talcott's Patent Processs of mounting photographs (silver prints), I caused the inventor to mount a choice print for me seven months ago. I am pleased to state, that although the photograph has stood exposed to the full rays of the sun, every day it shows not the slightest trace of deterioration, and continues to be admired by all who see it. The Talcott method decidedly enhances the appearance of silver prints in every way, besides affording an extremely tasteful and elegant style of mount. Wilfred A. French,
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Importers and Dealers in Photographic Supplies.

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Dear Sir: Regarding your method of mounting photographs, we would say that it is by the best that we have seen, giving the picture a soft and yet brilliant appearance, while its simplicity takes nothing away from the picture itself. Yours respectfully

Soule Photo. Co.
Soule Art Publishers, 338 Washington St.

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We are permitted to refer to Edward L. Wilson, Editor and Proprietor of the "Philadelphia Photographer," Ex-Mayor Martin, 324 Commonwealth Avenue, Boston; Williams & Everett, Art Dealers, 79 Boylston Street, Boston; George H. Hastings, Art Photographer 147 Tremont Street; W. H. Partridge, and many others.

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When practical, photographs should be furnished us unmounted, and made much darker than for ordinary mounts. Liberal discount to the trade.

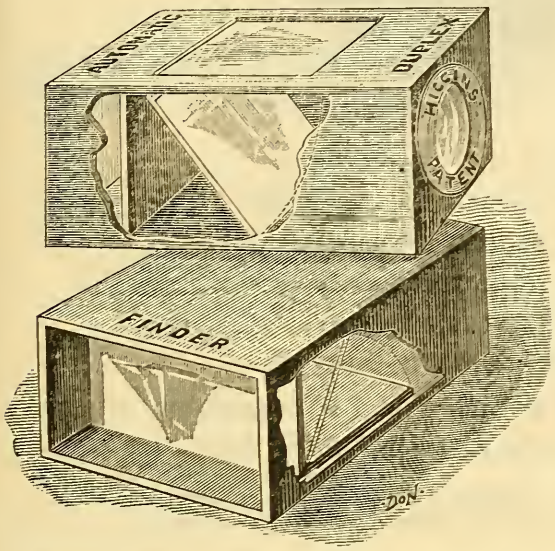
For any one sending $1.00 and a Cabinet print, rich and strong, I will mount and return the picture, express prepaid.

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Its Duplex character is a feature of great value, for by it the scene as existing in camera field is seen in finder by LOOKING DOWN UPON IT, and not by endwise inspection as with stationary camera on tripod. Consequently by it ANY CAMERA can be utilized for a portable or so-called detective by merely placing finder on top of camera as held under the arm or otherwise by operator. The image moreover is now seen non-reversed, and its brilliancy as with all detectives and finders when used "in the open," will be enhanced by the usuul shading of screen by hand. The extreme simplicity with which this change is effected—by simple reversal of box—highly commends itself.

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For either Dry or Wet Plates.

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The First and Only Original and Perfect One Offered to the Public (beware of the fraudulent and worthless imitations that will soon follow), the Atelier is complete, as testimonials from our most distinguished artists confirm.

Per Pint Bottle, 80 Cents.

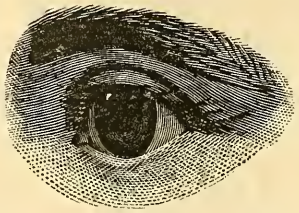
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[OVER.]

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insist on the steep and rugged ascent (because it *seems* the most direct) and pull against the old traveller who has over and over again been up and over the winding route, when he only, knows THE BEST WAY. Whatever else you are,

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During the last half-dozen years which have seen the annihilation of uncountable dry plates, innumerable questions have suggested themselves as to the whys and wherefores of the many provoking failures we have made in photographics. Working spasmodically, as rare idle moments presented themselves, it is little wonder that perfect success was so seldom achieved, but just what it was that sometimes produced perfect negatives, was no less puzzling than what it was that so often produced perfect failures, and it was slowly borne in our mind that this fascinating art had its foundations in science, and that it would be quite useless to seek the answers to the riddles without first having, with some little thoroughness, refreshed one's memory as to the operation of the law of optics and the order of chemical reactions. By blindly following the instructions of the hand-books that are prepared for the use of amateurs, a reasonable measure of success rewards the operator, until there comes occasion for leaving the plain road and attempting to work to the desired end with no better guide than an awakened instinct. In such straits as these recourse is had to books, which teach the subject with all desirable thoroughness only to find that they are somewhat diffuse in treatment and voluminous in bulk for a busy man, who is not preparing for a professional career, to spend his time over. There was really a need for something between the slight hand-book and the all embracing treatise, and such a book has been prepared by the editor of the Philadelphia Photographer and the writer of several books on photographic methods. It is adapted to the needs of both amateur and professional, and would be a useful hand-book to have in any gallery, and it has one preëminent qualification for such service, it is nearly square in form, and, as a consequence, will open out flat and stay open, as books of the usual shape rarely will.

It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

A good index, fairly well cross-referenced, makes the book useful for quick occasional reference.—*Amer. Architect and Building News.*

A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better —DEAN WRIGHT, in the April *Boston Academy*.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text book of the Art. By Edward L. Wilson. Published by the Author. New York, 1887. Price $4. Pp. 528.

In making the above claim that this work is a complete text book of the art of photography, the author has not overstepped the mark, for we have seen nothing to compare with it in clearness and attention to details and manipulations. The author's easy style is already well known to those interested in the subject, and goes a long distance toward making the "Quarter Century" an interesting volume, entirely independent of its large store of information. After an outline history of the subject, the theory of photography is treated of; then follow the subjects of light, the camera and lenses, the diaphragm, artistic principles, indoor and outdoor work, chemicals needed, negative making, printing, photo-engraving, slide making, etc., etc., with a host of details worked in under the proper headings. Isochromatic photography is treated of in a separate chapter, and its special value in certain classes of work noted. The more prominent features of the work are the chapters on lenses, art principles and the making of paper and film negatives. The treatment of this last subject will be found of especial service to the travelling amateur, who is often deterred from adopting the use of flexible negatives simply because he can find little reliable information concerning their peculiarities. We know of several cases of amateur enthusiasts in the art who have tried the "films," and finally returned to the old stand-by glass plates, because of difficulty in handling the later process. By the light of such information as Mr. Wilson has supplied, this difficulty largely disappears, and the process is simplified by giving a detailed understanding of it. The arrangement of the book is exceptional in one respect that greatly increases its value for general work. The main text is supplemented by foot notes in smaller type, comprising quotations from all our leading writers on the subject, and in many cases containing original methods that have not yet become generally known to photographers. This collection Mr. Wilson has been in an excellent position to make, as editor of the *Philadelphia Photographer*, and the readers of the "Quarter Century" will be more than repaid by a close comparison of the methods presented.—*Iron*.

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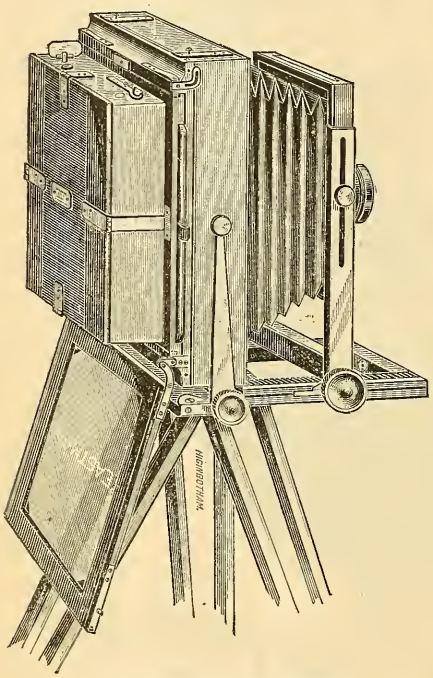
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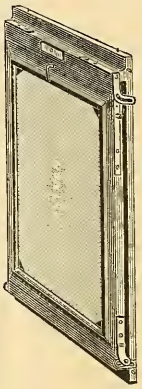
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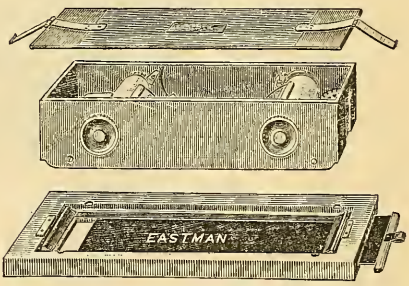
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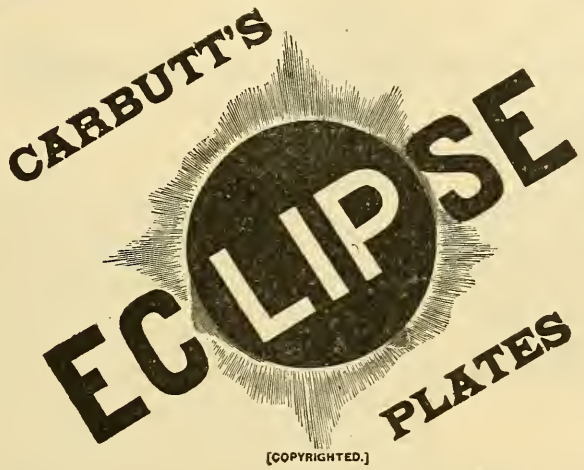
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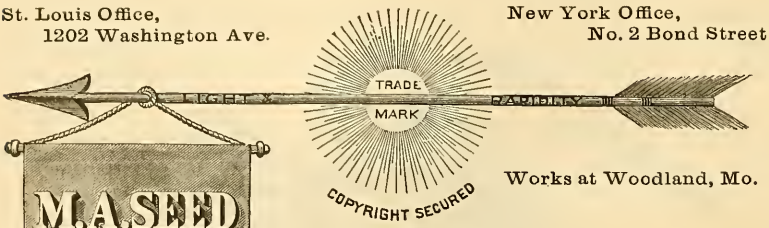
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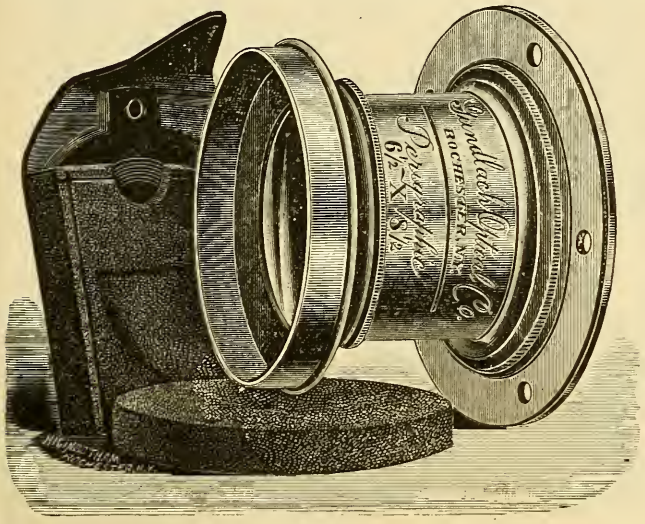
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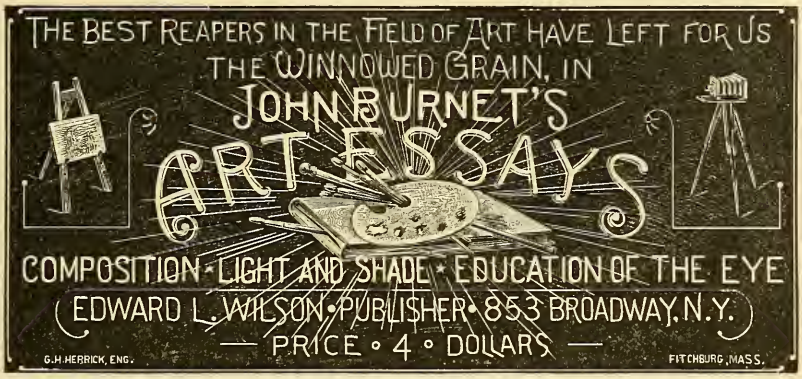
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Author of "Pictorial Effect in Photography," "Picture-making by Photography," "The Studio and What to Do in It," etc., and the greatest English Photographer and Artist.

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I am glad to see you are publishing reproductions of Burnet's Essays on Art. If photographers really cared for art, which I sometimes doubt, and knew the value of these books, you would sell a large edition. I remember well as a boy, long before I had thought of photography, saving up my pocket money to buy one of these, at that time, expensive books. I chose the one on Composition, that admirable essay, which, with its illustrations, is so clear and convincing, I have always looked upon as the very solid foundation of all I may know of art. The other essays I have read and admired but never possessed, for by the time I could afford to buy them they were out of print and difficult to obtain. I strongly recommend these books to all who want to know what is really sound in art. Respectfully yours, H. P. ROBINSON.

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A NOTED ARTIST'S OPINION OF BURNET'S ESSAYS ON ART.

To W. I. LINCOLN ADAMS,

DEAR SIR: The "Practical Essays on Art" form the safest guide to all students of pictorial arrangement and composition. It is not a book to be placed on the library shelves to be consulted from time to time, but rather one to be studied daily until all the principles it advances have become a part of one's definite knowledge. Read, re-read, analyze, apply, and then return again to this masterly compendium. One's originality is rarely of value unless based on such a sub-structure of principles as are so ably explained. I would place this in the hands of every amateur and professional artist and photographer in the country, if I could. I hope, since that is impossible, that all students will save their pennies until they can own the book, and thereafter truly *own* it by becoming thoroughly familiar with its contents. Delight in possession of this sort no money can express. With best wishes for the success of this *revival*, I remain, Respectfully yours,

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No. 1. July, 1888.

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Published Monthly

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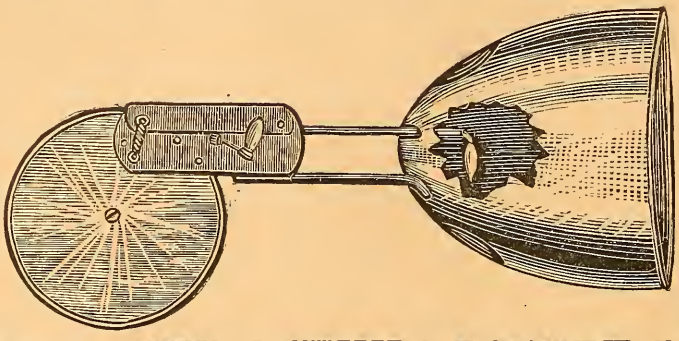
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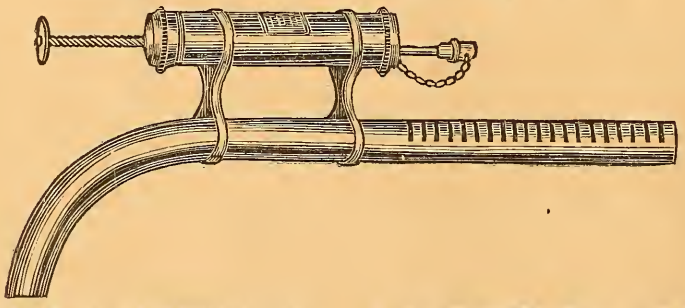
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PRACTICAL ESSAYS ON ART. By John Burnet. Reproduced entirely by Photo-Lithography, by the Photo-Gravure Company, New York. Arranged and Edited by Edward L. Wilson, New York: Edward L. Wilson, Publisher, 1888. Price, $4.00.

The publication of these reproductions will be hailed with great pleasure by all students of art, and particularly by artistic photographers. As many know, the original work was published in three parts, as follows: 1. Practical Hints on Composition in Painting, illustrated by examples from the great masters of the Italian, Flemish, and Dutch Schools, published in 1822. 2. Practical Hints on Light and Shade in Painting, illustrated by examples from the Italian, Flemish, and Dutch Schools, published in 1826. 3. An Essay on the Education of the Eye, with reference to Painting, illustrated by copperplates and woodcuts, published in 1837. The original price was in the neighborhood of $14, and for a number of years the work has been scarce enough to command many times that amount.

It is to be seriously regretted that so many competent draughtsmen and technically first-class photographers have grown up without the advantages of a work of this kind, and the fact is not sufficiently appreciated that the main difference between the artist and the picture-maker lies in the one point of knowing how to choose a position. To expose a plate on a beautiful landscape, develop it according to rule and then *pay another man to print from it,* is the height of the ambition of many amateurs; but let the results of such work be compared with those of the careful student of positions and compositions and they are nowhere. To be able to estimate exposure and calculate the strength of your developer properly are all very well; but add to this the knowledge of where to stand your tripod and how to choose the best conditions of light and shadow, and you are no longer merely a photographer, you become an artist who uses the camera as an instrument of precision instead of making it a toy. Another class of students to whom Burnet's Art Essays will render incalculable aid is the critical class, and here a great aid is rendered to the intelligent public as well, for a critic who thinks he knows, but who judges without stating the principles upon which his judgment is founded, becomes a nuisance to his friends and a burden to society. This trouble can now be readily obviated by a careful study of the Art Essays.—*Iron.*

Reviewers and Practical Readers Say:

THE essays of John Burnet have been the guide and friend of many an artist, who has afterward made a name in the world. And many a one who is know getting gray-headed would willingly acknowledge his indebtedness to that clever writer for a great deal of the knowledge which has helped him on his way. Burnet has published three of these essays.

Dr. Wilson has hit upon the very happy idea of reproducing these three valuable works bound into one volume—with all the original illustrations. The book, indeed, is a fac simile reproduction of the originals, both pictures and text being copied by the aid of photo-lithography.

The reproduction of a work of this kind must be a very costly experiment, but its existence only requires to become known to insure a large sale among amateur photographers, most of whom are beginning to understand that a knowledge of art principles is somewhat more important in the production of pictures than exposure tables and developing formulæ. They cannot have a better guide than this book of Burnet's, for not only does it explain matters in a very clear manner, but its precepts are supported by examples from the works of those whose names are writ large on the page of art history.

This book, too, ought to be a godsend to those butterflies of society who go to the Academy and other picture galleries, because it is the correct thing to do. They, as a rule, know nothing of art, but they talk about it as if they did, and Burnet would assist them to a few fresh ideas.—*The London Camera.*

WHILE all parts are of great value to the student, we think the part on "Education of the Eye" will be found of most practical value to the photographer, as that organ is very deficient, and much in need of education.

The work is printed in clear, large type, making it very easy to read. It is strongly bound, and will prove a valuable addition to any library.—*St. Louis Photographer.*

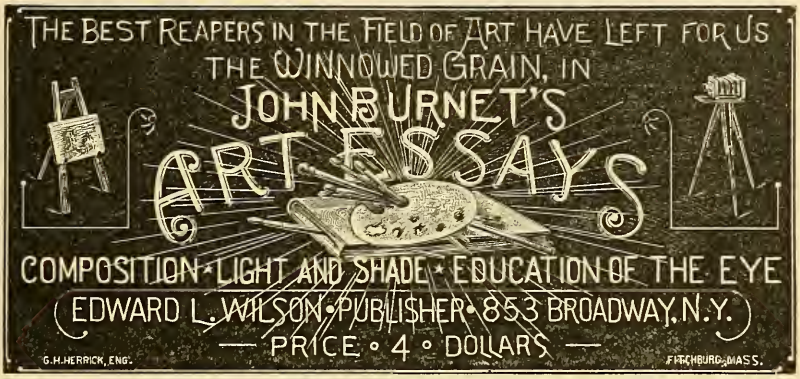
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With *Burnet* I am very much pleased, and photographers and all other artists owe you a debt of gratitude for giving them the opportunity of becoming possessors of such a work. There are certain books which do not lose their value through time, but which, being out of print, become exceedingly scarce, and are only to be found in big libraries Hence they are not accessible to those to whom their contents would be of the greatest value and assistance. Any one who, like you, reproduces a book of this kind, and makes available the knowledge contained in it, renders a distinct service in the cause of culture. Yours, sincerely,

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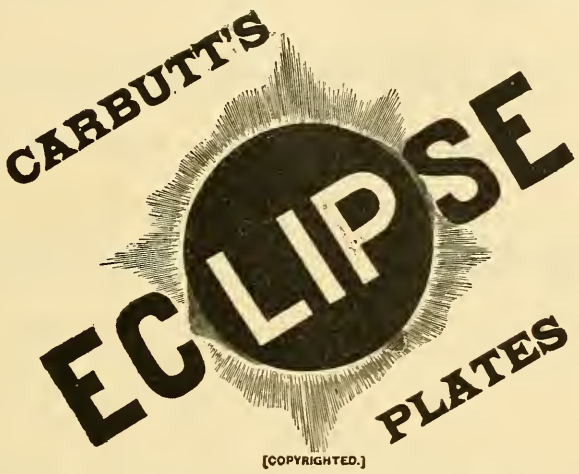
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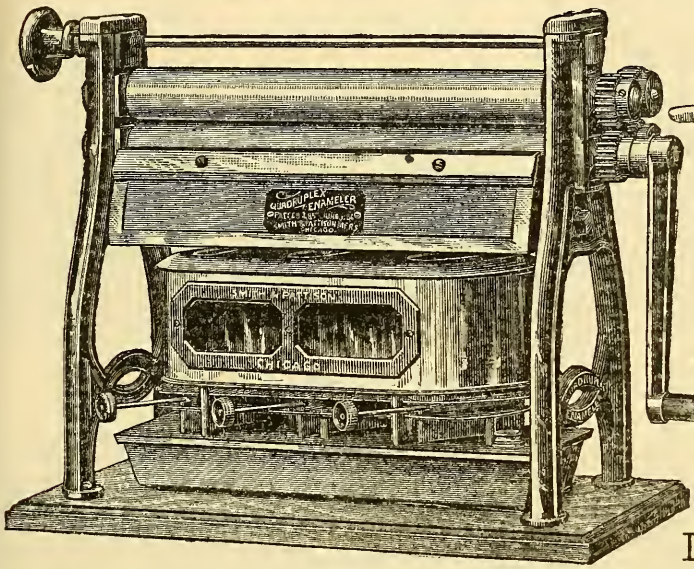
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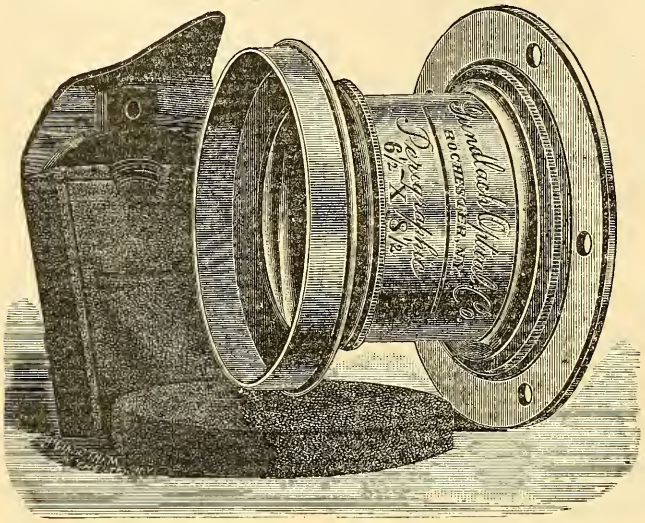
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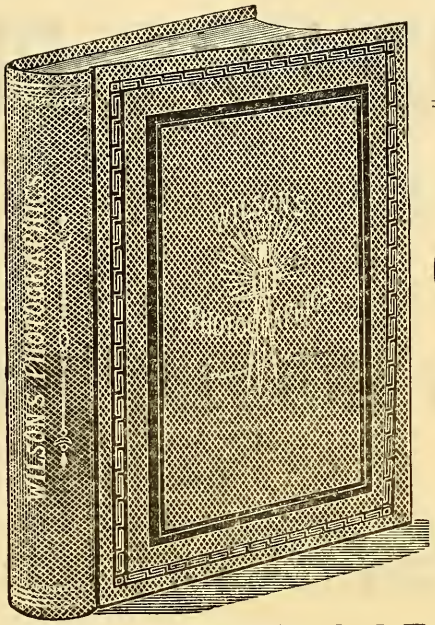
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AFTER THE BANQUET.

THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. AUGUST 18, 1888. No. 328.

TO MY CAMERA.

BY C. LOWATER.

The art of Angelo that holds
The mirror up to nature's face:
That catches all the subtle grace
Of beauty fresh from her great moulds;
That all the distant world unfolds
To wondering eyes, and bids us gaze
On distant climes, and many a place
'Neath India's suns or Greenland's colds
You give to my poor, untaught hand.
Mine is the power, the skill divine—
With aid from you—to fix the charm
Of fleeting beauty, and command
The sun himself, with tint and line,
To aid the work of my weak arm.

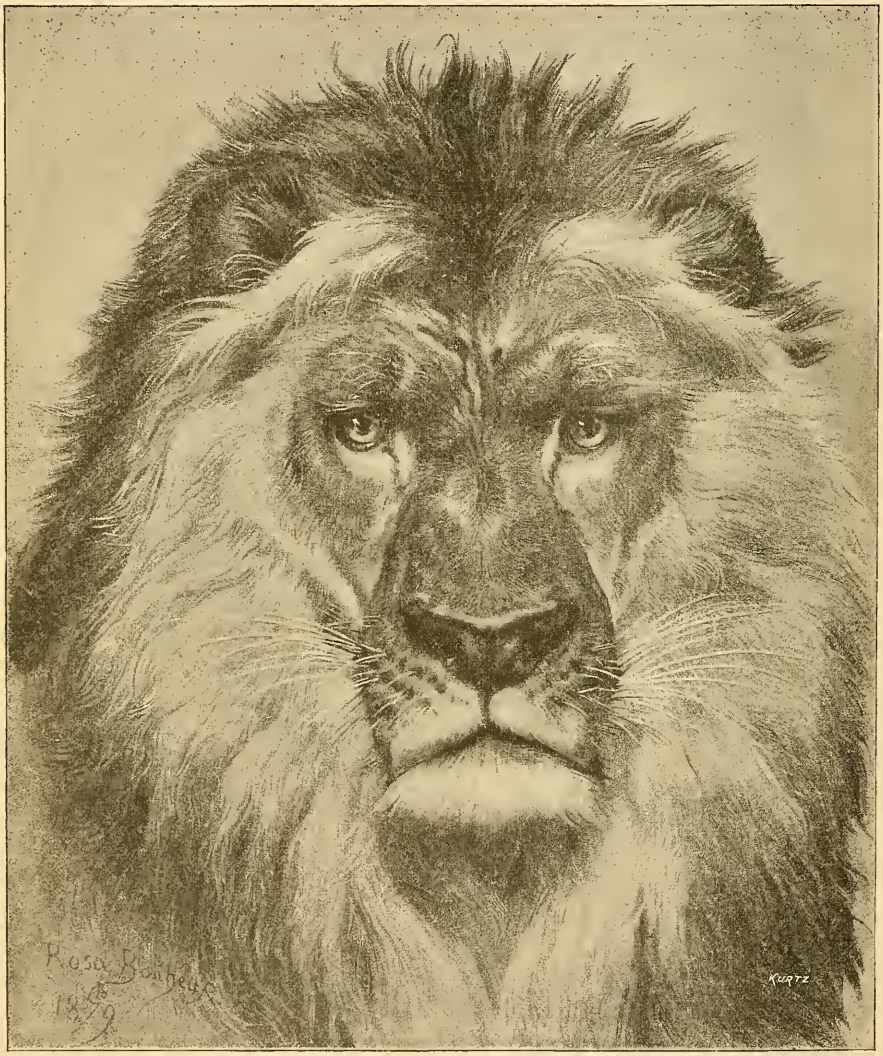
OUR PICTURE.

One day last summer, near Tilsonburg, in Canada, close to the edge of a woods, there was a grand banquet set. The *menu* was not an extravagant one, but in appearance it was very beautiful. For pottage, there was the morning dew seasoned with the effervescence of sunlight. The fish had all turned into grasshoppers, and, therefore, the second course was made up of rosy clover-blossoms with honey sauce, followed by a salad of pungent, golden dandelion flowers. Then came the strong meats, of meadow-grass and timothy, and juicy clover leaves. A merry, pebbly-bottomed stream supplied the viands, and the cool breezes contributed by the neighboring trees fanned away the insects while the guests partook. It was a silent banquet; not a single toast was offered —not even a vote of thanks to the kind lady (Dame Nature) at whose expense the entire repast was supplied. When the guests became satiated they quietly retired to the edge of the wood and as quietly lay down, that the process of digestion and assimilation might have a fair chance. While thus resting and mentally comparing their latest experience with others, an unthinking photographer with artistic sense came along, and surreptitiously crept up to within focal distance that he might take in the whole scene. The light favored him, and his skill stood by him. Only one trifle disturbed him. As is usual in such groups, one of the subjects moved her head out of position, and left just one little bad line in the composition. But that was only a trifle, and in his *After the Banquet*, the intruding photographer to whom we have alluded, Mr. Fred. Pollard, secured an admirable picture. He sent us a proof of his success, and so pleased were we with it that we invited the use of his negative for our embellishment. At once it was forwarded to us, and at once we carried it to our amiable friend Mr. Kurtz, to share our pleasure and to reproduce it for our purpose. Not content with doing so once, he has repeated his kindness, and supplied us with *two* splendid zinc-etchings by two different processes—the first by Kurtz's new process, the second by the old Meissenbach process. The vast superiority of the former over the latter will be seen at once. It is a superiority not due to any process, but to the skill of the workman and the talent of the artist. Mr. Kurtz cannot himself *tell*

versal fame. These subjects have been selected on account of the varied order of technical difficulties they presented in their reproduction.

For instance, the marine, on page 483, is a reduction of Goupil's photo-gravure of the famous painting of Th. Weber, of Paris, of money secured for the Stewart collection.

In our next number we propose to complete the demonstration by reproducing a landscape, a tableau of personages, and an illustration of still life, archæological or sculptured.



Départ pour la Pêche. The "Lion's Head," on this page, is one of Rosa Bonheur's masterpieces, and the chicks, on page 487, are from a gem by Sues, which the power

It would have been more appropriate, undoubtedly, to have printed all of the three subjects *semi-hors texte*, as with the marine scene; but as there are in this matter tech-

nical as well as artistic considerations, we have intercalated two of the plates closely in the text, notwithstanding their size, in order practically to find out the effect obtained, and have demonstrated how far the softness of the lines of the engraving harmonize with the surrounding type. In those publications where economy of space is paramount, this is an essential point and should not be lost sight of.

But before entering more deeply into the technical merits of the question, it may not be amiss nor uninteresting to cast a retrospective glance toward the times when wood-engraving was first resorted to for the embellishment of books or the elucidation of their text.

We do not propose here to speak of the first struggles of wood-engraving as applied to images, caricatures, and playing cards, which were, to the best of our information, contemporaneous with the invention of paper in the first part of the fourteenth century. The art took the name of "xylography," and the specimens we have left show that but little progress was made before Albert Dürer, in the latter part of the fifteenth century, under the protection of Maximilian I., devoted some of his genius to it. To be sure, collectors attach great worth to any of the productions of the xylographic art of the fourteenth century, on account of their scarcity, while some would-be connoisseurs find wonderful artistic traits in some of those uncouth, inexpressive, and grotesque outline figurations. In the name of good taste and common sense we protest against these effigies, which have not even the excuse of hastiness of performance on their side, nor even the hidden and latent merit of the first attempts of childhood's drawing with pencil and slate.

As with the matrix of type-engraving, it was the jeweller's skill which finally raised wood-engraving above the level of these grotesque outline figurations. For, as Ambroise Firmin Didot remarks, in his *Histoire de la Gravere sur Bois*, although the great artists of the fifteenth century, unlike those of our days, did not disdain sometimes to engrave their own designs themselves, as in the case of Albert Dürer and others, who were alike skilful with the graver on wood and that on copperplate, ordinarily the work was confided to an engraver graduated from the bench of a silversmith. Oftentimes the draughting on wood of the original design was also confided to a draughtsman. This is almost invariably the case in our days, so that before reaching the eye of the public, an original conception passes sometimes through the hands of three distinct parties, who cannot help leaving upon it more or less of their individual idiosyncratic interpretation.

The new art was fated to degeneration, however, by the strong undercurrent created by its application to manufacturing interests. The inevitable cheapening process followed, just as in our days. Although the great Yankee nation was yet in its embryo, at that time things was done in a slovenly manner, under the spur that "time is money," until wood-engraving in the illustration of books fell into disrepute, not to say disgrace, and the more costly process of fine line-engraving on copper replaced it almost entirely.

In our estimation, although differing in this with some very respectable authorities, art did not lose merely in respect to its popularization among the greater number, but art for art was equally the loser. We would be the last to fail in appreciation of the great superiority of copper- or steel-engraving in the matter of fine lines to the coarser grain of the box-wood. However, we think that the metal leaves even in the gems of the steel-engraving art, the coldness of the very metal which serves to reproduce them. This may be a matter of imagination, but we have never been able to free ourselves from this idea, even when contemplating those engravings that artless ingenuity, confessing to our objection, has imprinted on the mezzotint or the so-called china paper.

Be that as it may, the close observer cannot fail to find in the steel-engraving the ear-mark of the graver on the metal in the shape of a predominent burr at the outlines. Not so with the engraving on the grain of the box-wood. Moreover, if the grain of the latter does not offer so much of a serrated surface at the steel-plate, and does not permit of equal fineness of line, it has this

undeniable advantage, namely, the gift of imparting mellowness and warmth to the subject treated.

However, at the time photography was discovered the finer books were illustrated either with copper- or steel-engravings, and illustrating on wood was almost entirely confined to periodicals and technical works.

When old Sol was diverted from his time-honored occupation of furnishing heat to our bodies and bringing to maturity earth's vegetation, and was harnessed to the car of scientific art, the most optimistic never anticipated that in the short time of not over a quarter of a century, such progress in photography proper could be realized, much less, that it was destined to supplant—as it undoubtedly will in time—both the art of wood- and that of steel-engraving, and obliterate with one of its powerful rays the shortcomings of each.

Of this we have not the slightest doubt. The new art sweeps away, at a stroke, all the objectionable, all the technical impossibilities that have stood unsurmountable to either of the old processes for at least five centuries.

For example, in the mechanics, the draughtsman was not altogether a respecter of proportions in designing on the wood the subject-matter, whilst the wood-engraver was no less recreant in his turn in following with accuracy the delineations made by the pencil of the former. The shades as well as the lights were left to his sole interpretation of what was fit or proper, inasmuch as they were indicated by a mere wash of a more or less sombre hue. If the draughtsman and the wood-engraver pulled together, some fairly accurate results might be obtained; but imagine the dismal effect when they pulled in opposite directions. In this respect the writer has been the almost incessant victim of too much assumed knowledge on the part of these intelligent and high-toned gentlemen, and to use a common phrase, has oftentimes found himself between two stools.

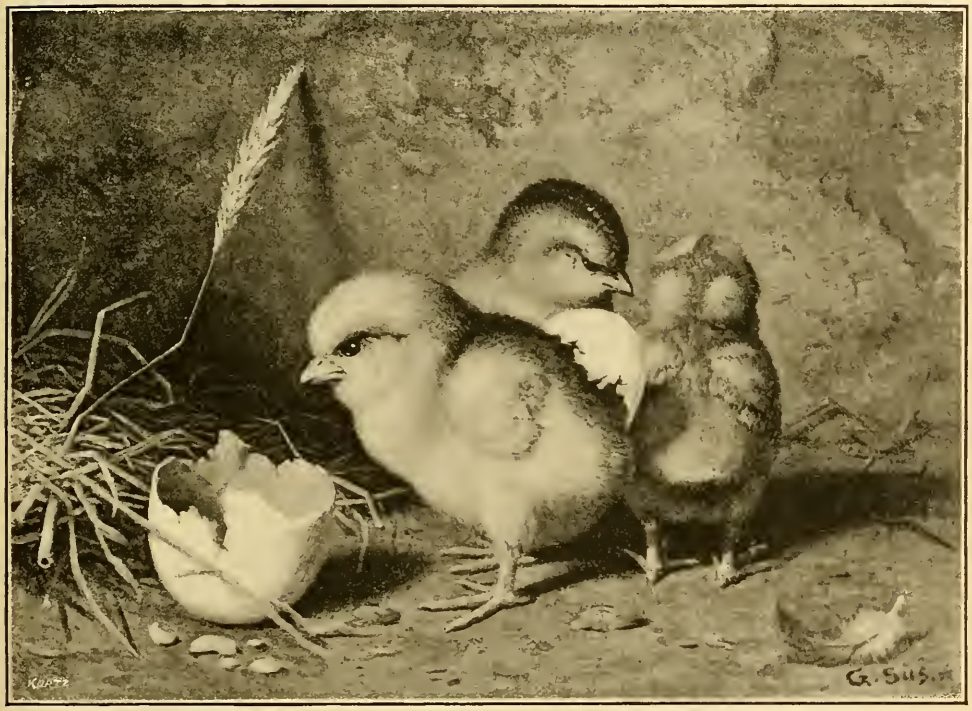
More direful results would ensue in matters of a purely artistic character, such as a steel-engraving of a portrait, for instance, or the rendering of an oil painting on wood.

We remember that once upon a time we received from South America a fairly preserved daguerrotype with the request to have it engraved on steel. As it is not the province of the modern journalist to dabble in indiscretions, we will pass over in silence the name of the engraver to whom the task was entrusted. When questioned as to the probability of his turning out a first-class piece of work, he indulged in some very learned generalities which created in our mind the suspicion that we had knocked at the wrong door, but the reputation of the man as a master of his art allayed to a great extent our suspicions, and we left him the work. About six weeks later we received a proof of the steel plate minus the daguerrotype. Upon examination, we did not recognize the features, and we came to the conclusion that we had received the proof of some one else, and that ours and the daguerrotype had also taken the wrong direction. We acquainted the engraver with the state of our mind on the subject, and received his visit almost immediately. He was greatly astonished at our inability to appreciate the acutely artistic interpretation of the daguerrotype. He did not say as much, but strongly hinted that we were devoid of the divine *inflatus*. In art, realistic interpretation is not art, but merely a "*trompe l'œil.*" Thus this axiom, overdigested, was made to serve as an excuse for a complete want of resemblance in a portrait, whose greatest merit should have been an absolute likeness to the subject. The upshot of all this was that the portrait, with its plate, was shipped to South America on trial, and was found wanting. In time we received the flattering information that the box had arrived all right, but that through some unexplained inadvertence we must have received the daugerrotype of one of the distant cousins of our correspondent, as the steel-engraving looked somewhat like him when he was about ten years younger, with the exception of the garments, which were evidently those of the writer.

Not alone accuracy is gained by the new process, but it seems to impart, or, better, to retain the vital warmth of the subject reproduced, as in the lion's head, for instance; of which, in our estimation, neither

steel nor wood could give anything like so faithful a representation.

But, aside from all this, the system has countless mechanical advantages. The slowness of steel-engraving makes its use practically impossible for all work that has to be executed within a reasonable time. In this respect, wood-engraving, although far ahead of steel-engraving, fails also to satisfy the exactions of modern necessity. It is true that by the division of a woodcut among



three, four, and even six engravers, its production is accelerated, but this very division of labor saves time only at the expense of proper uniformity of execution. When reunited, the several parts that had been entrusted to as many diverse workmen, would lack oftentimes that homogeneousness of ensemble so indispensable in a work of such a character. Retouching, with consequent delay, would have to be resorted to at the seams, which could not, in all instances, be glued with absolute accuracy. This would leave, as can be detected in many of the larger woodcuts that have illustrated our more pretentious periodicals, wavering lines, if not absolute dissolutions of continuity, considerably marring the general effect.

Moreover, woodcuts have always presented great difficulties to the printers in the making ready, calling for a whole system of patching up or cutting out in order to bring out more strikingly the light and shade. Not so with the new process, which calls for an almost flat impression, and thus saves considerable experimental labor.

It is to Mr. Kurtz, of this city, to his masterly skill as a photographer, to his earnest scientific investigations and love of art, for art's sake, that the new process is indebted in this country for its advancement.

In our next number we propose to initiate our readers, not into the technical features of this wonderful discovery which yet forms part of a secret, but into its capabilities and the wonderful revolution it will create the

world over in the art of illustrating periodicals and books, as well as in the popularization of the masterpieces of old and modern times.

COMPOSITION AND CHIARO-OSCURO.

BURNET'S *Practical Essays on Art* have long been known to artists as, everything considered, the best practical work in English on the subjects with which they deal. These are "Composition in Painting," "Light and Shade in Painting," and "The Education of the Eye." We take the occasion of their republication by Mr. Edward L. Wilson to lay their main points before our readers, attempting, at the same time, to bring them into some logical connection, which Burnet did not try to do. He rather jotted down his thoughts as they occurred; and as the bent of his mind was practical rather than scientific, his work forms but a collection of useful rules to be kept at hand and frequently referred to. A selection from it, made in the same fashion, would be of doubtful utility, and would give but a poor opinion of the whole. Burnet's book, though not regularly arranged, has its salient points, which become evident to those who study it for some time. His other thoughts naturally group themselves around these. In giving an orderly arrangement to our extracts, therefore, we are but doing what every reader of the work comes, in time, to do for himself, and in this way we hope to introduce the new edition to a new circle of students in the best manner.

Writing of composition, Burnet covers the ground several times over in his opening paragraph, where he says:

"Composition is the art of arranging figures or objects so as to adapt them to any particular subject. In composition, four requisites are necessary; that the story be well told; that it, the composition or group, "possess a good general form, that it be capable of receiving a proper effect of light and shade, and that it be susceptible of an agreeable disposition of color."

In reality none but a pedantic painter would separate, even in thought, the disposition of color, the effect of light and shade, and the general form. Burnet seems to recognize this in the next sentence, where he says: "The form of a composition is best suggested by the subject or design, as the fitness of the adaptation ought to appear to emanate from the circumstances themselves." The practical rule which he derives from this, the most general statement which he makes, may be stated shortly, as follows: The circumstances of the action often oblige us to determine on a particular arrangement, as otherwise we might be obliged to put an emphasis on an insignificant object, or throw an interesting point of the action into shade, or into the background. Hence the necessity of attending to the form or the composition from the first. Then, as simple forms are most effective, and are also easiest to manage, he naturally thinks it well to confine his further remarks to those which are simplest. These he considers to be "Angular Composition," by which he means composition in triangles; and "Circular Composition." Of each of these forms he gives many examples from the old masters, his remarks on which we reproduce, occasionally adding some of our own. The articles on "Composition in Landscape," which have already appeared in *The Art Amateur*, deal with several other sufficiently simple forms of composition in addition.

Of the many examples which Burnet gives of the use of the diagonal line are one, a very simple and obvious arrangement after Paul Potter, and another, a scarcely less simple, yet very subtle composition of Metzu. A remark of Burnet's which applies with especial force to the former, is that many of the great masters, in compositions of this angular class, have habitually crowded all of their most interesting material to one side of the diagonal (see article on "Landscape Composition," passim) as, in Potter's picture of cattle and the principal lines of the ground and sky lie all in the one direction, and at the one side. This, he well observes, gives a character of richness strictly analogous to that which we often observe in a first sketch, and which is then due to the multiplication of the outlines while the artist was searching for the right one. He also bids his readers remark that

the few objects in the upper right-hand portion of the picture, a tree with one almost leafless branch, two birds, and a cloud, seem more important by reason of the open space around them, and, therefore, balance the richly-filled lower part. He is not quite right in that "therefore," as without the objects mentioned there would still be a good enough balance, the rest afforded to the eye by a large open space being almost as pleasant as the occupation given to it elsewhere. It is to be remarked that the branch before spoken of sympathizes with the principal mass in direction, showing that Potter felt that otherwise the composition would be out of balance in spite of the interesting foreground group. Neither is the composition so merely angular as it appears at first, for the branch and the semi-detached cloud between them enclose the portion of the sky filled with light, and which, with strong contrasting accent furnished by the birds, must in a painting be very interesting.

Similarly, the composition after Metzu —an interior, with a man writing at a table placed near an open window—is not purely angular, or, rather diagonal, although the diagonal line is by far the most important as a line. But it and all the other horizontal, perpendicular, and diagonal lines with which the picture is filled, are there simply to contrast with the roundness of the features and the flowing hair of the man's head. Burnet, in his remarks, deals principally with the coloring of the picture. "The figure," he says, "is dressed in black and white coming in contact." . . . "The black is repeated by the hat. and diffused by the black marble in the floor; the white is referred to the white marble in the floor, and collected into a mass by the white wall; the red of the carpet (or, rather rug, used as a table-cover), focussed at the light by a stick of wax, is repeated by the back of the chair, and carried up by the outside of the window on the edge of the picture," all of these objects being of various tones of red. Thus it would seem that if concentration is the principal of the composition as to form, diffusion is the same as to color. It will be seen, too, that the colors are arranged so as to suggest a circular, rather than an angular composition.

Let us turn now to a striking example of circular composition, Raphael's cartoon of Annanias and Sapphira, which is probably known to most of our readers. Burnet calls attention to the simple means by which Raphael, while disposing his figures about a circle in perspective, secures a fine oval form to the whole, and gives the group of the apostles its due importance, although placed in the background. The postures taken by the figures by degrees approach more and more to an erect position as they recede from the foreground, while the apostles alone are drawn up to their full height, and are, further, placed upon a raised dais immediately above the break in the semicircle caused by the fall of Annanias. He further says, very justly, that Raphael's greatness in composition is shown, not so much by his strict carrying out of so simple a plan, but rather by the ingenuity and knowledge displayed in selecting attitudes that are natural, that grow out of the circumstances of the story, and yet fill their place in his prearranged scheme.

We have room to refer to but one of the many examples which Burnet gives to illustrate his hints on the management of light and shade. The engraving is after the Dutch painter, Nolpe. Of this he says, that when a dark shadow is carried through the picture it not only affords an opportunity of giving a breadth of effect, but the receding portion of the sky and perspective of the ground are assisted by their sharpness being swallowed up. But we may add that this is also a good example of the one general rule of composition in masses of dark and light, viz., to carry light against light and dark upon dark for richness, as well as to contrast the darkest with the lightest masses for strength of effect. Both these principles are here carried out in the picture as a whole, and in all its details, making it from this point of view a very interesting and instructive composition. An easy experiment suggested by Burnet will further illustrate these principles. Let a light collected into a focus, by means of a lens, fall obliquely upon a wall—choosing, we should say, one of rough-cast in preference to a smooth wall —you will then have a bright spot of light contrasted with the darkest part of the sur-

face, and the light as it spreads will lose in intensity. Both light and dark will be broken into by the projecting points of the rough-cast catching the light in one case and throwing shadows in the other. By varying the angle of the light, and by introducing various obstacles, one can in this way study all the principal effects of light and shade made use of by painters. Of Burnet's "Essay on the Education of the Eye," we can only say here that it is grounded on intelligent observation, and is more logically consistent than the other portions of his work. It is fully illustrated with diagrams. Artist and amateurs are to be congratulated on the republication of this useful work, which has long been out of print, and has in its earlier editions become rare and costly.—*Art Amateur.*

PARIS LETTER.

PARIS, June 11, 1888.

MR. W. GOOLD LEVISON,
President Brooklyn Academy of Photography.

DEAR SIR: Since my last letter, of May 16th, I have continued my explorations among the French photographic fraternity with increasing interest.

At a dinner given at the Hotel Continental to M. Gaston Tissandier, Editor-in-chief of *La Nature*, I had the pleasure of meeting Messieurs Paul and Prosper Henry, who kindly invited me to visit them at the Observatory of Paris. The gentlemen are earnest toilers in scientific photography; their nights are employed in stellar and lunar work (exposures ranging from one second to four hours), and their days on solar and instantaneous microscopic. For their stellar charts they employ the regulation plate of 13 x 18 centimetres on the scale of one millimetre to one minute of arc. The equatorial used for this is arranged with a second glass of a slightly less fôcal length as a finder and corrector; as even the most exact regulator would not keep the stellar field to be photographed absolutely true on the sensitized plate, it becomes necessary to watch one star continually, and correct any deviation; practically, observations every five minutes during an exposure are found sufficient. The lens used for the photographic equatorial is of 33 centimetres diameter, achromatized for the line of the spectrum and worked at full opening; its focal length is of 3.40 metres (about 11¼ feet). The Henry brothers are now constructing a lens to be of 72 centimetres diameter and of 18 metres focal length, which they hope to use on plates of 60 centimetres.

Their plates are made especially with a view to perfectly plane surfaces, and the resultant measurements become very exact. Twelve observations will work together on a complete chart of the heavens, as soon as the necessary lenses are ready.

The day I had the pleasure of calling on M. Marey was hardly bright enough to admit of any work, but the dark day was forgotten in the charming reception tendered us by M. Marey, a perfect gentleman, as unpretentious in his manner as he is able in his science. As you know, his studies have been directed to the analysis of movement, particularly animal locomotion. For this he has a thoroughly installed gymnasium and an outdoor race-track with the necessary electric and chronometric appliances for measurement of time in traversing short distances. One glaring white background is used for dark objects; this has a southern exposure. His main background for the study of moving white objects is in reality a large room probably forty feet square, completely lined with black cloths and velvets, and facing north. A tower above, with a projecting platform, holds a camera pointed down on the heads of his subjects, another camera in front takes them in profile as they move across the field, and a third obtains a diagonal view. The three cameras are electrically connected so that the exposures are simultaneous. He calls his cameras photochronographs, inasmuch as the successive exposures are rigorously ten, twenty, or forty per second, the shutter moving by a clockwork regulated to the precision of a chronometer. His shutter is a disk of thin metal revolving directly in front of the plate, of a diameter of more than double the largest dimension of the plate used. The openings are radial slits. As his method consists in receiving consecutive impressions upon the same plate, it

happens that with either a slowly moving object, or a rapidly revolving shutter, the images superimpose on the plate. To avoid this he employes two cameras (and intends eventually to use more) with the openings of the shutter so arranged that the successive pictures are taken upon each plate alternately.

I had the pleasure of an invitation to the first annual excursion and dinner of the Société des Excursionists on June 7th. It was a grand success and would have been grander had the sun deigned to shine a little earlier in the day. The Society had chartered one of the "Mouches" passenger boats that ply on the Seine between the bridges and suburbs of Paris. At 2 P.M. we sailed from the bridge of the Tuilleries, a party of over fifty, with thirty-five tripod cameras of all sizes, hand cameras of various kinds, and ammunition, all told, of over four hundred plates. In spite of the rain and clouds the entire number of plates was exposed, with what general result I know not; my own twenty gave me probably ten fair pictures. An event of any importance unaccompanied by a dinner would be a circus without horses to our Gallic friends, and I must confess that after the labor of the day I was quite ready to sit at the table myself. We arrived at Bas Mendon, an outskirt of Paris, and thanks to the indefatigable energy of M. Albert Londé, Vice-President of the Society, who had labored and wrestled with each preparatory detail of the excursion, we found everything ready. An original menu drawn by Albert Tissandier and photographed by Petit & Co., graced each cover; the invited guests were the pleased recipients of this menu printed on satin. M. Gaston Tissandier sat at the head of the table, and grouped about him were the guests: M. Janssen, President of the Academy of Sciences of the Institute; M. Davanne, President of the Société Française de Photographie; M. Block, Vice-President of the Chambre Syndicale (Commercial Union of Manufactures); M. Lebreton, of the Société d'Etudes Photographiques, and others, among them the writer. The after-dinner speeches were quite happy and genial. M. Janssen said that he had heard of many applications of photography, and of many developments, but its application to the development of the social relations and ties was a new one, and a successful one judging from the brilliancy of the day's work and the number brought together. M. Davanne likened the Société Française and that of the excursionists to mother and daughter, each charming but in a totally different manner, both laboring to please, and neither jealous of the conquests of the other. This enabled me to compliment both mother and daughter, and to ask that American amateur societies, and more especially the Academy of Photography of Brooklyn, be admitted to the family group as their American cousins.

On the return to Paris at night a number of magnesium-light pictures were taken, on deck and in cabin, with much success.

Yours very truly,

FRANK LA MANNA.

DESIRABLE FEATURES IN CAMERAS.*

WITHOUT troubling you (life being short) with the history of the camera obscura and its development into the modern photographic camera, let me at once come to the subject, which is the selection or construction of a perfect dry-plate camera.

Cameras vary in size from two or three inches to ten or more feet square. These latter may be called camera rooms. They are operated from within, and used for enlarging, but not being very portable will not come within the scope of our present requirements.

Camera boxes are of two kinds (why I do not know)—the portrait box and the view box. The only difference of any consequence in these two classes of cameras is that the portrait camera is made clumsy and heavy, whilst view cameras are usually light and flimsy.

While we can find no fault with many modern cameras on the score of portability, we look in vain for a still more important feature, viz., a wide range of usefulness.

The camera we are supposed to be seeking

* Read before the Philadelphia Amateur Photographic Society.

is one in which no element of utility is sacrificed to excessive portability and compactness. It must be equal to any and all demands that may be made upon it within the limits of size, and the capacity of photography. It must be equal to all kinds of architectural, view, portrait, copying, and enlarging photography; in short, a serviceable camera of all work. Many may not desire such a camera for their own use, but the consideration of it may be helpful to enable you to decide how many features, if any, you are willing to sacrifice in order to obtain greater lightness and compactness.

The amount of ingenuity which has been expended in camera designing has been very great, and the number of different patterns made in this country would seem to indicate that our task need be only one of selection; but I venture to think that a large part of the ingenuity developed on camera design and construction has been misapplied, or applied in only one direction, viz., that of compactness and lightness; hence the market is full of Fairies, Phantoms, Featherweights, and flimsy toys, more ornamental than useful. Many qualities of utility, such as rapidity and strength, being sacrificed to this (to me) insane demand for less weight and bulk. I have no wish to underate these qualities, indeed we must have them as far as is compatable with other, and, in my view, still more important qualities.

Before ordering our camera the first thing to decide is the important matter of size of plate we intend it to work. We must remember that every square inch in size of plate adds greatly to both bulk and weight. Five inches by eight is a very common size, but as it is ill adapted for pictorial purposes we will prefer a 5 x 7 or 6½ x 8½, and having some muscle and not being afraid of exertion, we decide on the larger size.

A 6½ x 8½ camera, to cover a wide range of work, should have a draw of from three inches to about twenty-four inches, allowing us to use lenses of long focus, and also be useful for copying.

We will next decide whether it is to be a front or back focus. Let us first inquire what are the advantages of each. The principal advantage of the front-focus camera is that it permits the slide being drawn down instead of up. When using the plate with its length vertical this diminishes the danger of light passing down the slide slit, as it is liable to do when drawn up. Besides it is more easily reached, especially with larger cameras. Besides this we have sometimes to work in corners or near the ceiling where we have no room to draw the slide up. Most of the front-focus cameras on the market are, however, carefully made to prevent our reaping this advantage. The disadvantage of the front-focus camera is, that the bed projects itself into the picture when using lenses embracing wide angles, especially when we drop the front below the centre. Another disadvantage is that in the case of a camera having a long draw the focussing pinion is apt to be in an inconvenient position when the camera is fully distended. This difficulty can, however, be overcome.

The back-focus camera allows the front to fall free of the bed, but does not allow the slide being drawn downward. Of the two, therefore, the back focus has the decided preference, as the bed never intrudes itself into the view. But seeing that each has its advantages, our camera must have both, or what comes to the same thing, be interchangeable.

The bellows next claims our attention. They are made both taper and parallel; the former of course packs into the smallest space, but the latter is by all odds the best for work, if that is to be the great desideratum. The conical bellows has an ugly trick of cutting off part of the image. It also restricts the amount of rise and fall of the front, especially when we need it most, viz., when using lenses of short focus. This being a very bad fault we readily decide in favor of the parallel bellows.

Nearly all the better class of cameras are provided with a single swing-back, that is, it swings only on one inner axis. The swing-back is a very useful adjustment when used with discretion, although some able men cry out against its use altogether, and say it is never necessary if we have plenty of movement to the camera front, and that nothing but distortion comes from the use of the swing-back. But as we are of a different opinion, we shall insist on our camera

having a double swing, that is both vertical and horizontal.

Double plate-holders are made of book form, and also solid. The book form are necessarily more expensive, and the frame being in two parts must be weaker, and in the larger sizes liable to warp and leak light. The most desirable form of the solid holder is one in which the plate is introduced at the end by sliding into a groove on either side of a fixed division.

Of course this camera must be provided with a reversing back and a rising and falling front, with a range of 7 inches, that is capable of rising 3½ inches, and of falling a like amount.

Now a word about carrying cases. They are generally made too broad. A case should never (unless absolutely necessary) be more than seven inches wide to carry with comfort, otherwise it will strike against the knees at every step, unless you walk out of perpendicular. The length and depth may be as much as you like.

Again, it is a mistake to pack everything into one case. Let the camera, lenses, and focussing cloth be packed in one case. The plate-holders can be packed in a satchel to be carried at the back, or with the tripod in the other hand; the weight is thus more evenly distributed, and more easily carried.

CHAS. TRUSCOTT.

"WHAT ARE WE HERE FOR?"

BY "LUKE SHARP."

THE day after I returned home from a very exhausting week at the National Republican Convention at Chicago, I sat down for rest to read the pages of the number of THE PHILADELPHIA PHOTOGRAPHER that had arrived during my absence. It was a welcome change from the whirl of politics and the banging of brass bands. Still my week at Chicago had one pleasure that I hope I appreciate. I met the Hon. Mr. Flannigan, of Texas, who is more famous than "Mr. Potter," of the same State, or brother "Barnes, of N. Y." Flannigan is the only man in America who sprung into lasting fame by simply propounding one question. In a former convention, when some one spoke disparagingly of the thirst for office, Mr. F. exclaimed, "What are we here for?"

Now, I wish the editors of photographic journals would take a quiet moment and ask themselves that question. The answer seems to be simple. They are here to edit. Then, why, in the name of all the prophets, don't they? Perhaps they think they do. I think they don't. Not a single one of them.

Take for example, the latest issue of THE PHILADELPHIA PHOTOGRAPHER, a model publication in so many respects. There is an article on hydroquinone, a subject that is at present, I think, of the first importance to photographers everywhere. The formula is given in grammes and cub. cms. Now, I object to grammes and cubic centimetres, and degrees centigrade, and that sort of stuff.

Of course, I can take my *Photographic Times Almanac*, turn to page 289, and translate it, but I should not be expected to do that; and, besides, it takes up valuable time, which many of us cannot spare. The editor would do it quicker and more accurately than I could, and that is what he is here for. Supposing THE PHILADELPHIA PHOTOGRAPHER has 10,000 circulation—which it ought to have—it takes each of us half an hour to figure out those wretched French formulæ that have no right to be in an English publication. There is 50,000 hours gone. At ten hours for a day's work, that would be 5000 days, and allowing 300 working days in a year, there are over 16 years of valuable time forever lost, just because the editor won't sit down and ask himself Mr. Flannigan's question.

If I edited a photographic publication in this country I would fly this banner at the head of the first column:

"This journal is published in the English language, for English-speaking people. If any correspondent has the cheek to send in anything that contains a phrase in any other language, no matter how apparently harmless, or if he uses grammes or centigrades, or any similar profane remark, he will be dealt with as the law directs."

MR. E. HUSTON, Fortville, Ind., favors us with examples of his landscape work.

SCIENTIFIC DEVELOPMENT OF THE PHOTOGRAPHIC IMAGE.*

BY J. CARBUTT,
WAYNE JUNCTION, PHILADELPHIA.

At the solicitation of our President for a practical paper to be read at the Convention, I have selected the subject "Development of the Photographic Image." I have been impressed, when examining the work of different photographers, that much of it would have been greatly improved had the plate had treatment in developing suited to the subject and lighting. There are photographers who make the study of the developing of a plate of as much importance as the lighting of the subject, and it is by such that we find produced the highest results in photography.

You may take the most perfect plate sent out by the dry-plate maker, and religiously follow his formula for development, but unless your own judgment is largely made use of in so preparing the developer as to suit the subject, the most mediocre results may be produced. Strength of alkaline solution and temperature at time of using are largely the controlling factors to a successfully developed negative. The photographer may arrange the most artistic pose and lighting, and produce but a poor result photographically by unskilful use of his developer, and he most likely blames the platemaker for the poor quality of his negative.

The fixed alkalies, potassium carbonate and soda carbonate, in combination with soda sulphite, are the alkalies most in use by American photographers in forming a pyro developer. Of the two alkalies, the soda carbonate has my preference, especially in summer time. By compounding a stock alkaline solution in the following manner, it becomes a matter of extreme simplicity to form a developer suited to the lighting and subject in hand:

Take of

Soda Sulphite (crystal) .	2 parts.
Soda Carbonate " .	2 "
Water (warm) . . .	10 "

This, when cooled to a temperature from 60° to 65° F., will be found to test 20° with Baumé's hydrometer. By dilution with water to one of the three following strengths a developer can be formed more suitable to the subject than by using one strength of alkali, as is commonly done:

1 part stock to	5	parts water weights	3½° B.
1 " "	8	" "	2° B.
1 " "	10	" "	1⅝° B.

The 1 to 10 may be considered a weak solution, the 1 to 5 strong, and the 1 to 8 medium. To any one of these may be added pyro, dry or in solution, in the proportion of from 1 to 3 grains to the ounce. It will be well to bear in mind that the slower and more vigorous working plate requires a developer stronger in alkali and weaker in pyro, and the reverse for a highly sensitive plate. For a subject in light colors, drapery, with from 1½ to 2½ grains of dry pyro to each ounce, or 1½ drachms of 1 in 16 pyro solution to 3 ounces, and 1 or 2 drops of 10 per cent. solution of bromide soda or potassium, not bromide of ammonia. For general run of subjects having dark or I recommend the 1 to 10 alkali solution, mixed colors, the 1 to 8 alkali, with from 1½ to 2½ grains of pyro to the ounce, forms a generally useful developer. For the dark colors in drapery and complexion, the 1 to 5 alkali will be most serviceable.

In conclusion, I would say that a full exposure, a weak alkali, and a little bromide to the pyro, are conducive to well modulated negatives, whereas, a strong alkaline solution gives a flat and gray negative, lacking good printing qualities.

* Read at the Photographers' Association of America Convention at Minneapolis.

REDUCING DENSITY OF NEGATIVES BY VARIOUS AGENTS.*

BY CHARLES EHRMANN.

Overdeveloped negatives yield hard prints, no matter how long sensitized paper may be exposed to light under them; but such negatives can be reduced to normal density, either locally or over the entire surface. To do this properly is as easy, and as difficult, as any of the important photo-

* Presented at the Minneapolis Convention of the P. A. of A.

graphic operations requiring skill, circumspection, and a close observance of the process while it is going on.

When we first became acquainted with gelatine-emulsion plates, owing to want of practice and experience many errors were made in the development, and in the majority of cases we produced but very feeble negatives, from which, to make good printers, we learned to intensify. Others, however, were so excessively intense that printing from them in a reasonable space of time was quite impossible. To reduce undue density we resorted, in the beginning, to an old remedy that had served us well in the collodion process—a stong solution of cyanide of potassium, to which was added, occasionally, a trace of iodine.

To a certain degree this remedy proved to be quite efficient, but as its action is slow, and commercial cyanide of potassium invariably contains as much as from 20 per cent. to 25 per cent. of carbonate or hydrated oxyd of potassium, the gelatine film weakened, under its action, to such an extent that it sometimes became detached from the glass plate entirely, resulting, of course, in a loss of the negative. The method might answer, however, if a chemically pure cyanide of potassium could be obtained.

To reduce the excessively strong deposit of metallic silver into iodide of silver by means of an iodine solution, and subsequent refixing in hyposulphite of soda, is, theoretically, quite correct, but can be done only with much care and attention by an experienced operator. The method is worthless when the reduction to iodide has been carried on but a trifle beyond the proper time. The hypo bath must necessarily take off more of the silver haloid formed than was intended, the negative becoming, as a consequence, too feeble for printing.

Not much better did we fare with the method of reducing the silver deposit to chloride of silver by means of weak solutions of ferric-chloride, with the subsequent refixing in hypo. No more reliable results can be secured with this method than with that of iodide of silver. It is true that the conversion of the metallic deposit into chloride of silver has proved to be very useful in removing green and red fog, or discolorations of the film, excepting those caused by sulphides formed, but before a print can be made from the negative thus transformed into chloride, a redevelopment with ferrous-oxalate must be resorted to, which, however, by no means reduces the original density of the plate, but increases it very perceptibly.

Reducing through the transformation of the silver into chloride is risky, for many reasons. To judge approximately correct of the degree of the reduced intensity, before refixing the plate, requires a most experienced eye. An insufficient amount of chloride formed necessitates a repetition of the process, and when it is excessive, the whole proceeding results in a failure and the loss of the negative. If the negative has been primarily perfectly washed, the transformation into chloride of silver progresses uniformly and slowly, but the presence of a mere trace of hyposulphite of soda is an obstacle to success. Ferric salts (ferric-chloride) are reduced into ferrous by hyposulphurous salts, and if the negative has not been totally freed from the fixing agent reduction into chloride can take place but imperfectly, or not at all.

Reducing agents, containing principally iron chloride and similar substances, have been frequently proposed for practical use, and are, in fact, prepared and sold, and greatly praised for their virtues. Apparently these media act well, slowly, and uniformly enough to allow of a perfect control, and with satisfaction to the casual observer. The chloride of silver formed, however, remains in the film, as it is not removed by fixing, as in the previous cases. What will become of a negative reduced in that way, and if a large edition is to be printed from it, I leave to every printer to decide.

Cupric chloride, formed when cupric sulphate and sodium chloride are applied to the negative, is just about as unreliable as any of those previously mentioned. The action is based upon the same principles. Owing to the copper salt the deposit formed assumes a non-actinic color, and unless the silver chloride is fixed away (and not even then), no great success can be expected from the process. Dr. Eder has constructed a negative reducer, consisting of cyanide of potassium,

iodide of potassium, and mercuric chloride. Its action is similar to those we have considered, but an excess of cyanide of potassium dissolves the respective chloride, cyanide, and iodide of silver formed, thus effecting the desired reduction of the negative deposit. Eder's solution is easily controlled in its action, but the reduction takes place slowly, an hour, or even longer, being requisite to reach the desired effect. Hence this process, with all its advantages, can never become quite popular in a very busy laboratory.

Farmer's solution, consisting of a mixture of ferricyanide of potassium and hyposulphite of soda, is probably the most generally accepted method to reduce over-intensity in negative deposits, as well as in printed paper proofs. It is controllable and safe, leaves no color-stains behind, and acts with such an energy that, after a short application, the whole silver deposit may be totally destroyed, leaving upon the glass a pure gelatine film without the least trace of an image. When ferricyanide of potassium, itself sensitive to light, is mixed with hyposulphite of soda and then exposed to diffused light, only for a short time, the mixture will turn blue, and, owing to a separation of sulphur, turn milky. A part of the ferric salt is reduced to ferrous, ferri-hydrocyanic acid formed, sulphur, Prussian blue, and probably hydroxide of iron, separated. Under the influence of light, Farmer's solution will soon become inactive, and should, therefore, be applied only in the dark-room, or in a much-subdued light. With proper precautions the solution has proved to be extremely active, and, as its energy can be well controlled with the greater or less amount of the ferricyanide of potassium used, it has been almost universally adopted. The process is truly chemical, the ferricyanide of silver forming is dissolved in the hyposulphite of soda.

As a reducer for negatives it is effective when the general density of the plates require modification, or when only a local reduction is desirable. The solution, mixed with strong gum-Arabic mucilage, and applied with a soft brush to the parts to be reduced, gives, with a little care and dexterity, all desirable effects. Halation marks excessively developed whites, and even flare spots or ghosts have been removed or subdued by it. For the reduction of paper prints, it is best to soak them in hypo solution and add gradually to it but small portions of the ferric salt.

Less successful has been its application to the Eastman permanent bromide paper, which, more or less, assumes a yellow tone with it, the method now to be spoken of giving more satisfactory results.

Not less effective than Farmer's solution, and preferable to it in many respects, is the method with potassio-ferric oxalate, proposed by Monckhoven, introduced and made practical by Bellitski. Its peculiar virtues are that even by long-continued action no trace of color is left behind, therefore is more useful in reducing gelatine paper prints, like those upon the Eastman paper. It acts probably slower, but more steadily than Farmer's solution, but as the action begins only when the entire film has been penetrated by it, reduction must not be carried to exactly the degree of intensity required, but somewhat below it; the solution continuing to act within the film for some time after the operation has been interrupted by washing the plate. Potassio-ferric oxalate is the beautiful, green, crystallized double-salt of ferric-oxalate and oxalate of potassium, which is formed by higher oxidizing our ordinary ferrous-oxalate developer. If this highly energetic developer is exposed to air but a short time, the active ferrous salt takes up more oxygen, becomes ferric, and ceases to be a developer. Hence, old or partly oxidized developer is quite frequently used as a restrainer, or to commence the development of plates suspected of overexposure. By higher oxidation the oxalate developer loses part of its energy (ferric-oxalate does not develop). If, therefore, the ferrous salt remaining in the solution in lower quantity does the work, would it not be as well to apply for this purpose a freshly prepared ferrous solution containing an amount of the iron salt equivalent to that existing in the oxidized solution? But this does not seem to be the case. A peculiar virtue is displayed by the salt of higher oxidation; it possesses a restraining power by which most excessive over-

exposures can be well controlled. The ferric-oxalate does not develop; it restrains, and will ultimately, under certain conditions, reduce the metallic silver deposit on plates developed with any of the known developers.

Before we consider the action of this reducer, it may be as well to describe the sources from which the valuable and beautiful salt is obtained, the more so as many practitioners have been prevented from using it on account of its scarcity, or by being ignorant of its mode of preparation. Old oxalate developer exposed to air in open vessels will, after a short time, deposit potassio-ferric oxalate in the form of green crystals; it will do quite well to separate them from the solution, remove the brown iron oxyd adhering, by washing in water, dry the crystals between bibulous paper, and preserve them for use. But if it is desirable to recover the whole quantity of the salt, proceed as follows: Take the whole amount of old developer on hand, pour it in an evaporating dish, and allow it to evaporate spontaneously in a subdued light. The resulting brown, powdery mass, interspersed with a multitude of green crystals of various sizes, is then to be mixed with one-tenth or one-fifteenth of its weight with crystallized oxalic acid, and, with five or six times its volume of water, boiled in an evaporating dish. The resulting thick and muddy liquid is filtered into another evaporating dish while yet hot, the dish covered up with paper, and set aside in a cool place over night. From it form beautiful crystals of a pure emerald-green color—the potassio-ferric oxalate.

The salt is sensitive; light reduces it again to ferrous-oxalate; it must, therefore, be kept in the dark. The salt can also be prepared by adding to a weak solution of ferric-chloride another weak solution of neutral oxalate potassium, filtering the solution, and crystallization. It is necessary to add enough oxalate to secure perfect neutralization. An excess of it will soon precipitate; an excess of iron chloride renders the resulting salt unfit for use.

The formula for reducing is simply to take 10 parts of the green crystals in weight, previously dissolved in as little water as possible, and add to 100 parts of the ordinary hypo solution. When an overintense negative is subjected to this compound, the reduction will take place slowly, but perceptibly, and the process can, therefore, be easily controlled. The hyposulphite plays an important part. Without it the potassio-ferric oxalate does not reduce. A negative perfectly free from hypo may rest in a pure solution of the green salt indefinitely without any apparent effect. Remove the negative to a very weak solution of hypo and reduction will commence at once. Hence, it will be apparent that washing after fixing is not at all necessary when the negative is to be reduced.

The chemical process taking place has not been definitely stated, but the method is so secure, controllable, and in no case discoloring the plate, that it may well be considered of much practical value, more valuable, perhaps, than any other reducer.

I must not omit to mention, in connection with the chemical reducers which we have considered, one whose action is merely mechanical. I refer to the method of rubbing down excessive extensity by means of a linen rag moistened with alcohol. Friction reduces density by taking off particles of the silver deposit The intelligent negative-retoucher can by this means produce very fine effects, and make visible modulation quite obscured upon the crude negative.

DRY PLATES.*

BY G. CRAMER.

Since the introduction of the dry plate into practical use about eight years ago, the process has been brought to such a state of perfection that all its branches are now almost universally understood.

Plates are now made which combine a very high degree of speed or sensitiveness with all other good qualities.

Pictures are now produced with the minimum of exposure, and with a higher grade of perfection than was possible with the collodion and silver bath, as can easily be verified by the specimens of beautiful work shown at our photographic conventions.

* Read at the Minneapolis Convention of the P. A. of A.

The photographer of to-day can hardly imagine the troubles of his brethren in the olden time; for instance, in making a copy, sometimes requiring ten or twenty minutes' exposure, or taking views outside of a studio, or making pictures of restless children, family groups, etc.

But even if the process has been reduced to simplicity itself, there is always room for the true artist to show his superior skill and taste, and he will produce a picture which will bear criticism where another one not so gifted will, with the same materials, make but a mediocre piece of work.

It is admitted that the more sensitive the plates the more they must be guarded against injury by improper light, or too much light while developing, and that a very rapid plate does not permit any careless manipulation.

Forcing the development with solutions strong in alkali is detrimental to the beauty of the negative, and does not accomplish its intended purpose of making up for insufficient exposure. Mild treatment is always to be preferred, and whenever the clearness of a good plate is affected, it is a proof that the plate has been either light-struck, or that the developer is too warm or too strong in alkali.

Strength and temperature of the developer being of the greatest importance, it is evident that the developer should be used cold and more diluted in summer; while in winter it can be used stronger and warmer, on account of the liquid cooling very rapidly in the cold dishes and cold atmosphere.

The alkali now mostly employed is the carbonate of sodium, which, if judiciously used with pyro and sulphite of sodium, is unexcelled as a developer for dry plates.

The newly recommended hydrochinon has not yet been proven to have any advantage over this simple developer, either in rapidity or fine printing quality.

That the amount of pyro used regulates the intensity, and that the color of the negative can be regulated at will by the use of more or less sulphite of sodium, are facts now so well known as to need no further explanation.

Strengthening of negatives should be avoided as much as possible by carrying the development far enough, as it is easier to reduce than to intensify a negative.

For reducing intensity the combination of red prussiate of potassium and hyposulphite of sodium has no superior. In order to insure durability of negative and to avoid stains, the necessity of thorough fixing, and the frequent change of fixing bath, is urged by all authorities.

The great annoyance in the past, of frilling and softening of films, which caused the loss of many negatives, and especially so in hot climates, can be avoided by using cold developer and a fixing bath containing an equal amount of alum and hypo, as after passing through this bath the film is perfectly hardened, and the negative can subsequently be washed in warm water.

Different systems of marking the plates with numbers indicating their sensitiveness are used; but owing to the fact that there is no unchangeable standard of light by which sensitiveness can be measured accurately, and that under certain conditions the plates gain considerable in speed with age, no positive reliance can be placed in these numbers, and the only safe guide to ascertain the speed of a plate exactly is actual trial.

In the short time of its existence the dry plate has revolutionized the art of photography, and made possible that which in the wet-plate days was impossible.

Keeping abreast with the spirit of our century, the dry plate will be found prepared to satisfy the demands of science and the arts so far as human brain and ingenuity can do it.

TRANSFEROTYPE PAPER.*

BY H. S. BELLSMITH,
Rochester, N. Y.

SINCE the meeting of our Convention a year ago, many useful and valuable discoveries and applications of photographic principles have rewarded the earnest research of the many enthusiastic devotees of our art. Among them are, perhaps, none of greater importance, and destined to occupy a field of greater usefulness than transfero-

* Read at the Minneapolis Convention of the P. A. of A.

PROCEEDINGS OF THE



We filter from the tardy report of the Secretary, the following items pertaining to the sessions of the P. A. of A., held in Minneapolis, July 10th to 13th inclusive, 1888.

The classification, made for the convenience of our readers, is our own.

Communications.

Regrets from G. Cramer, of St. Louis.

Mr. President and Members of the Photographers' Association of America in Convention assembled: I regret exceedingly that sickness prevents me from being with you at this our Ninth Annual Convention. I had looked forward with pleasurable anticipation to meeting the fraternity and getting my share of the invigorating ozone supposed to be floating so superabundantly around and in Minneapolis. I had promised myself a most enjoyable time, and it is a sacrifice for me to miss it. Be assured that my thoughts are with you and that I wish you a pleasant and profitable meeting. May your deliberations be in harmony and good will, and for the best interests of the Association. With the heartiest good wishes to one and all the members of our grand and growing Association, I am

Fraternally yours,
G. Cramer.

Mr. James Landy, of Cincinnati, Ohio: I move that we receive Mr. Cramer's letter with regrets for his inability to attend our Convention, and appoint a committee to extend the sympathies of the Association to him in his present affliction, which I think is only temporary. I think a telegraphic dispatch to that effect would have a tendency to make him well. Seconded by several; carried with enthusiasm.

The President then appointed as said Committee: James Landy, W. H. Potter, and W. H. H. Clark. (Applause.)

Exposition Building,
Minneapolis, Minn., July 11, 1888.

Mr. G. Cramer,
St. Louis, Mo.

The Photograpers' Association, in Convention assembled, and in response to your letter of regret, unanimously vote that the sympathy of this Association be tendered to you in your affliction, that our loss in your absence may be your gain in a speedy restoration to health. The love and good will of this Association are ever with you.

J. Landy,
W. H. Potter,
W. H. H. Clark,
Committee.

Mr. Landy: I have a communication from Mr. Cramer in response to the dispatch sent him a day or two ago.

To the Photographers' Association Committee: Your telegram received. Please tender my sincere thanks for the expressions of kindness and sympathy toward me. I feel much strengthened by the good wishes and kind words, and am steadily recovering. Hoping to meet you all again in Boston, I am forever,

Yours fraternally,
G. Cramer.

Generous offer of Jex Bardwell, Detroit.

Detroit, Mich., Sept. 29, 1887.

Mr. Decker,
President Photographers' Association of America.

Sir: A day or two ago I received a letter from a gentleman in New York who desired to purchase some old works on photography that I have, and had, in consequence of adverse times with me, offered for sale, and including the books that had rendered so much good service to the craft in the bromide and silver-saving suits. Now in consequence of the kindness of the Association in their remembrance of the matter, and the aid they so generously sent me, and the unanimous action of the members prompt me to make an offer of the said books to the Association, if they desire to

receive them, *free of any cost or price*, but under the following conditions, to have and hold so long as the Association exists, but if the Association breaks up or becomes defunct, then said books revert to *John Jex Martin*, my grandson, without further consideration.

I am yours fraternally,
JEX BARDWELL.

Accepted with thanks, and a suggestion that the books be deposited in the Smithsonian Institution Photo-Library, if such should be formed.

A Prize Suggestion from R. Benecke, St. Louis.

Mr. Althaus said: Mr. Benecke, whose sympathies have ever been with the Photographers' Association of America, desires me to suggest for consideration the following item, which, if favorably received and adopted, would prove of great interest and usefulness to the photographers of this country.

It is this: "Since it is very desirable and of historic interest that the progress of our art be recorded from year to year, as well as the durability of our productions be palpably demonstrated, be it resolved that a small number, say six, of the best photographs exhibited at this and every succeeding convention be selected and left in charge of the Secretary, whose duty it shall be to place these pictures on exhibition at every Convention. To carry out this project would not involve any great expense to the Association, and these exponents of the present state of our art would no doubt be gratuitously contributed by those whose work was considered to have reached the highest perfection at the time."

The resolution of Mr. Benecke was seconded and carried.

A verbal communication from Mr. James Landy, of Cincinnati, on the nomination, as President of the P. A. of A., of Mr. H. McMichael, of Buffalo, N. Y.

Mr. Landy remarked as follows: Mr. Mr. McMichael is a well-tried officer. The success of the Buffalo Convention was all Mr. McMichael's work, and since that time our Conventions have been carried on in a systematic business way. It was he who inaugurated the charging for space. Before that our expenses were met principally by contributions. He charged for space when men did business there, and helped to pay our expenses and carry on the business of the Association. And he is an energetic "Hustler from Hustlerville." (Applause.) I think the Association owes him this honor for the services he has already rendered. (Applause.)

The President congratulated Mr. McMichael, and introduced him as follows: It is with great pleasure I introduce to you your unanimously elected President for the ensuing year, Mr. H. McMichael, of Buffalo, New York. (Applause.)

Mr. McMichael: I most sincerely thank you for this great honor, for it is indeed an honor to be elected unanimously, as they have informed me that I am elected, to the Presidency of the P. A. of A. It is an honor, also, because it substantiates a past record. It is an honor, also, because next year is the fiftieth anniversary of the birth of photography, when Daguerre gave it a free gift to the world. I trust that I shall have the pleasure of greeting you all in Boston next year. As we have come to the west, and we have seen photographers with what we call "western push," I hope we shall see you all in the east, and show you what we call "eastern push."

We shall not only have a convention but a celebration, the like of which we will probably never have an opportunity to see again. Again I thank you for this great honor.

DISCUSSIONS.

On the Value of "a Part" and the Metric System.

The President: I have here a question which was sent up to me by Prof. Forbes. It reads as follows: "Mr. Decker, will you kindly inform the meeting what is understood by 'so many parts of water,' *i. e.*, What does the term 'parts' signify?"

He has asked the question of me, and, of course, I can very readily tell you what I consider the term 'parts' to mean: I use one ounce of any one solution in so many

ounces of water, *i. e.*, so many parts. I would like to hear any other person's idea on this question of Prof. Forbes, of Macalester College.

Prof. Forbes: When you are making up the original solution, so many parts of the dry sort are said to be taken and so many parts of water. One is a solid and one is a liquid ounce. What does the term 'parts' signify in that connection?

The President: That is what I should like to hear from others.

Dr. Elliott was then called for to make some remarks upon this subject.

Dr. Elliott: I am a metric-system man. I believe in percentage solutions. And when I talk about percentage I mean something like this: Suppose we wish to make up one hundred ounces of fluid, or one hundred pints, or one hundred gallons. In the case of ounces and pounds the problem is easy enough. There is not sufficient difference between the weight of one ounce of water and the weight of one ounce avoirdupois to make much difference. According to the United States standard, which regulates the fluidounce of this country, there are about four hundred and fifty grains of water (that is to say, avoirdupois grains, not fluidgrains) in the fluidounce. It may be four hundred and fifty-one grains, but as I remember it is four hundred and fifty; at least that is near enough. The avoirdupois ounce has four hundred and thirty-seven and one-half grains only. In making solutions there is no difference whatever whether we take four hundred and fifty parts or four hundred and fifty grains avoirdupois. If we take ten ounces of water and add one ounce of sulphite of soda we have one part in ten parts. If we take five ounces of water and add to it one ounce of the carbonate of soda there will be one part in five. If we take one grain and dissolve it in five grains of water, there will be one part in five. Now if you use the French system of weights and measures, which is just as easy as the English — I use them every day of my life — you will find them easier than pounds, pints, and gallons.

The French gramme is one cubic centimetre of water, or it is the cube of the one hundredth part of a metre. If I say a thousand grammes it means the same as a thousand cubic centimetres. The tenth part of a metre is a decimetre, the hundredth part a centimetre. The system goes by a scale of tens in either direction, both solids and liquids, both weights and measures, and I am strongly in favor of the whole photographic fraternity adopting the French system. If you once get to using it, there would not be any trouble about grains in an ounce, ounces in a pound, or parts in a volume.

No matter whether they are pounds, or gallons, or ounces, we must have the parts all the same denomination. If it is ounces, whether it is one ounce of solid and so many ounces fluid or not, it must be in the denomination of ounces.

"A pint is a pound
All the year round"

is an old saying, though not exactly true. There are sixteen ounces in a pound, and about sixteen fluidounces in a pint.

You can dissolve grains in ounces and pounds because those are parts in parts.

Prof. Forbes: I think we are all very glad to hear this plain explanation. I think this sets us right. I am fully in accord in using the metric system. I have used it many years in my laboratory. It is so simple and convenient, if you have once become accustomed to the terms used. They are so easily changed from one to the other. If you try it, you will be surprised to think that you have waited so long, that is, if you have not already adopted the system. A gramme is simply a cubic centimetre of water. If you are told to take ten grammes of solid and ten grammes of water, you can measure the water.

Dr. Elliott: Some people among us think these weights and measures very difficult to obtain. You can get them just as easily as you can get the avoirdupois weights. In every civilized city in the world you can buy them.

Executive Business.

Action on the Metric System.

The President: I have here a resolution

offered by Prof. Charles Forbes, which he desires to be adopted by this convention.

Resolved, That this Association hereby adopts the metric system as its system of weights and measures. And, so far as practicable, the editors of photographic journals and writers for the same are most respectfully requested, when giving formulæ, to use this system followed by the English equivalent.

Dr. Elliott: Mr. President, I think I said pretty much all I wanted to say about this matter the other day, though I would like to repeat some of the ideas. The metric system involves this idea—that the weights and the measures are absolutely interchangeable. One gramme of water measures one cubic centimetre, and consequently a thousand grammes will measure a thousand cubic centimetres, and so on. They are perfectly interchangeable, and if you once get in the habit of using them there is no difficulty whatever, and I strongly recommend you to adopt this resolution, and work this way. Get a box of the metric weights, the gramme weights, and use them. You will find it is just as easy as rolling off a log. You can't make any mistake. If a man tells you to use ten grammes of soda and a hundred centimetres of water, you know exactly how many to use. No question arises in your mind whether it is a Troy ounce, an apothecary's ounce, or an avoirdupois once. I strongly recomend that you adopt this system.

The resolution of Prof. Forbes was then put and carried.

Dr. Elliott: I would move that we recommend all dry-plate makers, and all those who publish formulæ for developers, etc., to also print in their directions the formulæ upon the metric system, that it may be readily understood and used.

They can give the ounces and pounds if they choose, but we recommend them to give the formulæ in the metric system anyway.

Motion seconded and carried.

Action as to Certificates of Merit.

Mr. O. P. Scott moved that exhibitors who have meritorious exhibits at this convention, and who shall not have received a medal of any description, shall be given a certificate of merit, to be designated by the judges as they may deem proper; provided, that it shall be limited to one certificate for each class.

Mr. Scott's motion was amended by Mr. Landy to read that the jurors be empowered to give the same number of certificates as there are prizes, and it was thus carried.

Supplementary Report of the Judges.

The Supplementary Report of the Committee was then read by Mr. Ely, as follows:

Your Committee are grateful to the Board of Officers for sustaining them in the opinion that various exhibitors of merit, falling short perhaps of the highest standard, can be recognized officially by them. All could not secure the first prizes, and yet many are worthy of praise.

Your Committee, therefore, recommend that Diplomas of Excellence should be bestowed upon the following exhibitors: S. H. Edmiston, Gilbert & Bacon (flash light), C. L. Fowler, J. C. Straus.

Appropriation for the 1889 *Awards.*

Mr. McMichael: I move that $1000 be appropriated for the awards next year, to be awarded as the Executive Committee may see fit. I think it best to leave it entirely with them.

Motion seconded and carried.

REPORTS OF COMMITTEES.

On the H. T. Anthony Memorial.

MINNEAPOLIS, MINN., July 11, 1888.

Your Committee beg to report that the model for the bronze tablet to be erected to the memory of Henry T. Anthony has been made, and is now in the hands of the Henry Bonnaud Bronze Company, of New York, to make the casting, which will be completed in a week or two.

It will consist of a rectangular tablet 26 x 16 inches, with a frame-like border and four floral rosettes in the corners.

The following is the lettering:

IN MEMORIAM,

HENRY T. ANTHONY.

THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

"By their works shall ye know them."

E. DECKER,
Committee.

The committee was continued until their work was completed.

On Fire Insurance.

The President: The next thing in order is the report of special committees.

Mr. Bellsmith, in presenting the report of the Committee on Fire Insurance, said: At the last Convention held in Chicago a Committee was appointed for the purpose of calling the attention of the Board of Fire Underwriters to the present unfair rating of photographic establishments. That Committee consisted of Mr. Staples, of Indianapolis; Mr. Stuart, of Hartford; and myself. A meeting was called in New York in June, Mr. Stuart and myself being present. We there met the National Board of Fire Underwriters and placed our grievances before them, and received in return a promise of consideration and investigation, but we also learned that the classing of risks and the fixing of rates does not rest with the National Board, but with the State Board, although the National Board have a great deal of influence. I obtained from the Secretary the names of the Secretaries of the State Boards, and have drawn up a petition, gathering such information as was possible, and have sent it to eighteen of these State Boards. I believe, from the reports that I have received so far, although the petition was only sent out two weeks ago, that we may be decidedly encouraged, and may expect, in the near future, not only a reduction in rates but a change in classification, which, as you must all readily see, is of the greatest importance. I will read you the petition that was drawn up and presented to the Underwriters.

To the Honorable, the National Board of Underwriters.

Gentlemen: The undersigned Committee, appointed by the Photographers' Association of America, at the last annual meeting held in Chicago, Illinois, August 12, 1887, for the purpose of presenting to your honorable body such facts as might come into their possession tending to show that risks on photograph galleries are not properly classified at the present time, would respectfully submit the following facts, which they have reason to believe have never been plainly brought to your notice, or, if so, not presented in such a way as to merit an impartial and fair consideration.

We feel that your honorable body is not aware of the present state of the art of photography, as compared with the existing conditions in the past, and upon which photograph galleries were classified as specially hazardous, and are satisfied that such knowledge will have the effect of modifying the present rates which we consider manifestly oppressive and unfair.

The collodion or wet-plate process necessitated the use of pyroxyline and ether, in greater or less quantities, and we are informed that the use of these articles had a very important bearing on, and, in fact, our classification was based largely upon, the use of these articles in our business.

At the present time the collodion process is entirely superseded by the new, more convenient, and less expensive dry plate. These plates come to the photographer ready prepared for use. They are placed in the camera and the negative taken without undergoing any process whatever. The developer used is entirely harmless, and the dark-room of to-day is entirely free from any chemical or other articles which would endanger property, or cause a conflagration. Furthermore, it is impossible to properly develop a dry plate unless the developing- or dark-room is clean and free from dust or dirt, and under the existing conditions a well-appointed and properly cared for gallery is as good a risk as can be found. There is no apparent reason why we should be classed on a par with planing and powder mills, gas works, match manufactories, dealers in, or manufacturers of quick-lime, ether, phosphorus, celluoid, fireworks, and numerous other risks of the same class.

It is not only that we are obliged to pay exorbitant rates under the present classification that we complain: another, and, in fact, the most urgent objection is, that under our present classification when we go to a property owner to lease part of his building, he either refuses us a lease or demands an extravagant rental. His reasons being that when we move in his rates go up at

least fifty per cent., and if there are any other unfortunate tenants in the building, they are served in the same way under the rule that "all the contents of a building partake of the highest hazard therein."

The statistics of risks burned in the United States during thirteen years, 1875–1887, as shown by *The Chronicle Fire Tables—Abridged*, show: Number of photograph galleries and apparatus in existence by census of 1880, 1297. Number burned in thirteen years, 637. Number burned in 1887, 75, or on an average of 49 each year.

We contend that these figures are no criterion to go by for the following reasons: You cannot strike a fair average percentage of loss as the number of galleries shown by the census of 1880 is not a proper basis to figure on, the increase in their number since that time having been very rapid. Furthermore, the figures include some ten years or more of the time the collodion or wet-plate process was used.

You may argue that the number of fires in 1887 show a larger percentage of risks burned than in previous years. Granted: They do, according to the Census of 1880, but the increase in galleries will more than offset the advance, and bring the percentage of loss to risks in force down to very small figures.

Besides which the *Chronicle Fire Tables—Abridged* do not give the number of fires originating in photograph galleries, but only the total number burned, consequently the figures are of no use and can have but little, if any, bearing upon the question at issue.

Looking over the causes of fires in specially hazardous risks, we find, for example, under the head of cotton-goods factories, "number of fires in four years, 229."

As to causes of fires:

From unknown and not reported causes	60
Due to exposure	11
Reported causes aside from exposure	158

"The reported causes aside from exposures being distributed as follows:

Friction in machinery	71
Spontaneous combustion	21
Incendiarism	15
Matches	11
Lightning	7
Sparks	6
Accidents (not otherwise reported)	2
Burglars	1
Defective flue	1
Explosion (gas)	1
Defective heating apparatus	1
Lamp accidents	4
Sparks (locomotive)	3
Engines	3
Electric lights	2
Gas jets	2
Lime slacking	2
Furnace	1
Ashes	1
Explosion (lamp)	1
" (gasoline)	1
Steam-pipe	1

"The apparent chief cause of fire being friction in machinery. The percentage of friction fires, reported causes aside from exposure, being 44.9."

We simply quote these figures at random from among many others of like nature to show that a photograph gallery, without dangerous chemicals, not used at night, consequently not liable to catch fire from gas jets, the dark-rooms kept clean and not liable to danger from spontaneous combustion—is free from the leading causes which have resulted in raising risks to the class known as specially hazardous.

Another point to which we desire to call your attention is the valuation of negatives. We submit that the present valuation is absurdly low. The insurance companies and adjusters work upon the supposition that a negative decreases in value, and we contend that this view is entirely incorrect. The universal experience of photographers is that, as a rule, negatives become more valuable as they increase in age. We do not base the statement upon theory, but from our actual experience and observation; we confidently assert that after a few years orders are more liable to come in for reprints than at any other time.

This is a matter of great importance to us, and we ask your assistance and coöperation in putting a fair valuation on them.

With the advance of our art, the number of galleries and the commercial standing of photographers have increased in such ratio that to-day our business represents thousands

of dollars where only a few years ago it represented hundreds.

Our complaint is not a petty one, and we come to you representing the photographers of the United States, and ask you to honestly and fairly investigate our grievances, and grant us the desired relief.

And your petitioners will ever pray, etc.,

H. S. BELLSMITH,
Rochester, N. Y.
CHARLES T. STUART,
Hartford, Conn.
Committee.

Mr. Bellsmith: This report has been rather lengthy and probably a little dry, but we had to go into details and make as good an argument as we could with the material at hand. In the replies that I have received from the Secretaries of the Boards they have complimented us upon the case we have made, and we have every reason to expect immediate action. I think we have reason to congratulate ourselves upon it.

Moved that the report be accepted with thanks, and the Committee discharged.

Mr. Edgworth: I would like to know the expense this Committee has made this Society within the last year.

Mr. Bellsmith: If you remember last year Mr. Edgworth took occasion to delay this meeting about two hours simply objecting to a motion that was made allowing this Committee their expenses attending the Board of Underwriters, and that he wanted to restrict us to $100 and the Committee refused to work under this restriction. Now I want to say that the expense of the Committee is less than $25. (Applause.)

The question then being the acceptance of the report, it was agreed to.

Correct list of the officers, as elected, for the ensuing year:

President.—H. McMichael, Buffalo, N.Y.

Vice-Presidents.—George H. Hastings, Boston, Mass, and J. M. Appleton, Dayton, Ohio.

Secretary.—O. P. Scott, Milwaukee, Wisconsin.

Treasurer.—G. M. Carlisle, Providence, R. I.

AN AMATEUR AMONG THE DRY PLATES.

THIS amateur, like many other Americans, had travelled far to see and admire things abroad, to discover eventually that they had them much better at home. In other words, he had visited English and French dry-plate factories in numbers; but he had never seen the inside of an American dry-plate factory until Mr. Cramer took him down stairs from the office in St. Louis, pushed back a clean, newly-planed little door, let him inside, and taking him by the hand, led him forward into darkness and mystery.

The amateur had rendered utterly useless for further photographic purposes a good many plates, of all makes, sizes, and shapes. Shapes is said advisedly, for on square and circular plates in his disportings as well as the ordinary rectangle, had he cut his fingers and slopped his chemicals. So he silently prayed that out of the darkness no bubbling emulsion might lie in wait to boil over and frill his feet, no pile of 20 x 24s fall on his head. When he began to see a little, he discerned a row of men seated around the room before a broad shelf, each with a pile of clean glass and an earthenware pitcher before him. It looked like lunch hour, but it wasn't. For the men were balancing the glass on their finger-tips, and pouring upon it a milky, opaline fluid, that the amateur knew from previous experience to be emulsion. With wonderful deftness they poured, spun the plate, let the excess drain off; then each plate was laid on an endless band which slowly crept along one side of the roem, and carried the plates through the cooling chamber. Into this they went, finding it delightfully fresh on that warm day; but indeed the whole factory was that—the ventilating system is excellent—and the temperature is kept the same all the year round. Through the cooling chamber the band passed along, bearing its freight of plates; and when these reached the end, they were sufficiently cooled for the emulsion to have set, and could safely be taken off and placed in racks to dry.

And here were the drying rooms, fitted with racks from floor to ceiling, holding

thousands of plates, and all filled. Already the amateur had remarked on the generous scale upon which everything was built, far larger than anything in his previous experience. Now it fairly staggered him to see all these plates, and to think how many must be turned out of the establishment in a day. For his further confusion he was led out into the light again to see the spare stock of glass. Several of the good-sized rooms were full of the cases. This stock is always kept in reserve, so that if there is a sudden rush of work, or an accident, or if the weekly steamer fails to bring a freight of glass in time, it can be drawn on. There was about $15,000 worth of it there.

Back into the darkness again and into the emulsion room went Mr. Cramer with the amateur. Here the emulsion was boiling and bubbling gently in huge vessels, and a very photographic odor was perceptible. A number of great jars, with their mouths carefully tied up, held stock already mixed. In another room was stored the gelatine, shelves and shelves of it. Through more long and tortuous passages were reached the counting and wrapping rooms, where girls and men in a dim red and far from religious light—it was more like the caves of the Brocken in Irving's *Faust*—were sorting the plates into dozens and enveloping them in their numerous wrappers. As the amateur saw them carefully folding and patting the packages he remembered how carelessly he and fellow-individuals of his species are wont to rip these off, and how little they think of all the care and science that have gone to making the contents of the package —and making them so perfectly, and so cheaply.

Up stairs were the glass-cutting and glass cleaning rooms, and the storage rooms, where the familiar blue labels looked out from every shelf in tiers six or seven feet high. Finally came the door where they are shipped. As the amateur stood on the dented, splintering flooring and tried to think of all the corners of all the cases that had brought it to its present condition since about seven months before, when it was laid down, he was filled with wonder and reverence for the finest dry-plate factory he had ever seen; for the men who made it; and for the great and growing art of photography that had made it grow to such perfection and proportions and that kept it so busily at work. F. H. W.

POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 444.)

Blisters under the Albumen.

It is known that in the washing after fixing there arise sometimes blisters. In general, these now come very seldom compared with former times, and only in the warm season. Particularly in my paper it is seldom the case that these blisters appear, or if they do, they are very small and dry up again without any injury.

The cause of blisters is not yet accurately known. The only thing known is under what circumstances they arise most easily, and various methods have been proposed whereby they can be prevented. One such is as follows: Blisters will not occur if all the baths through which the albumen paper has to go are quite neutral. The inclination to the formation of blisters is less when the silver bath used is a weak one, while strong silver baths favor the formation of blisters; moreover, if standing water is used for the fixing bath as well as for the first water after the fixing, it is still better to use water that has been boiled and then cooled, or rain water. The blister forming is smaller when the sudden change from strong fixing soda solution to pure water is avoided and the pictures are brought first from the strong fixing bath (ten per cent.) into a weaker fixing bath (three to five per cent.) and then into pure water. The following means are also recommended: Moistening the picture with alcohol by means of a sponge and again washing before bringing into the fixing bath. Use of a weak alcohol before the first washing in well water. Use of a two per cent. alum bath before the fixing (five to ten minutes). Using a half per cent. ammonia bath before fixing (three to four minutes). Addition of some carbonate of soda or of so much ammonia to the fixing bath that it smells of ammonia.

The quality and thickness of the albumen and the thickness of the paper are all of important influence on the inclination to blister. Thin albumen films and thinner paper will hardly ever form blisters, whereas they are more easily caused when the albumen layer is very thick and glossy and the paper very strong.

It is evident that the gas blisters, forming between the paper and the albumen layer, in this case can dissappear more easily through the fine openings and pores of the albumen sheet than of the paper, as is easily noticeable in the forming of small gas-bubbles in the pictures found in the wash water.

Of late it has been thought that blisters can be attributed to the too hard drying of the albumen paper. Albumen paper which, after the silvering, is dried hard will, in spite of all remedy, form blisters, while limpid paper will not have this fault.

It is not impossible that the cause of the blisters is to be found in the carbonic acid which is partly bound up in the carbonate of lime of the well water, partly obtained from double carbonate of lime in the solution. In the washing the carbonic acid may be freed, owing to diffusion perhaps, or in consequence of the acid water of the previous baths (the residue of which sticks to the inside of the paper), and in the separating, in case there is not sufficient way of exit, lift up the albumen from the paper.

The following facts confirm this explanation:

1. The blisters are known to be filled with a kind of gas and not with water.
2. Acid gold and fixing baths favor the formation of blisters, while with alkaline and neutral baths the blisters do not occur.
3. Rain water and distilled water cause no blisters—they contain no carbonate of lime.
4. The addition of ammonia to the fixing bath prevents blisters, because the acid is neutralized.
5. From the chemical action of the fixing, the gas formation is not diverted.

It results from this that the best means of preventing blisters is the use of neutral baths, and, as far as possible, soft water that has been standing.

(To be continued.)

Editor's Table.

Pach Bros., 841 Broadway, New York, send us a touching group composed of a four-year old about to fire a rifle, and a three-year old near by stopping his ears. A cute picture.

Messrs. Fritz, Lambertville, N. J., and R. D. Beem, Greenville, O., are likewise expert baby catchers, and have sent us examples of their success.

Mr. George N. Moore, Seattle, Washington Ter., writes: "Send me Burnet's *Essays*. I have the essay on Composition which you issued some years ago, but I want the whole thing. Your magazine improves as it should from year to year, and is a magnificent publication."

A healthy baby's picture has come to us from Mr. H. A. Cudding, Bolivar, N. Y. It is technically excellent and so jolly looking as to make a continuous breeze in our office.

Mr. Cudding says, "I owe all I know in relation to photography to *Photographics* and the Philadelphia Photographer, of which I am an enthusiastic student."

Moonlight View.—Mr. W. L. Shoemaker, Phoenixville, Pa., has sent us a very interesting view of an old-time house, made by moonlight. Time seventy-two minutes with an open Voigtlander portrait lens; Seed plate, sen. 25. Mr. Shoemaker is "satified that the red, yellow, and green colors cannot be photographed by moonlight."

Mr. Alvin F. Bradley, Boston Highlands, has favored us with a dozen cabinets which place him away ahead of anything we have seen from him heretofore. His pictures of children are particularly creditable. He understands that it is better to catch them in their own pretty attitudes rather than to fuss with them until they are tired out. Some of his

catches are wonderfully well done, especially one of a child with a cat in her arms.

The little princess comes this time from Mr. J. McKean, Anderson, Ind. She sits upright in her baby carriage, and faces the camera with a wonderfully sweet dignity, and as still as a mouse. Nothing can be prettier—hardly anything better.

Negro pictures of "black-trash teams" etc., come to us from Mr. Ira F. Collins, Huntsville, Ala. They are "simply immense." One of them is as full of pathos and humor as the "go-cart" dragged by two cows and a mule is full of little negroes. But the crowning piece is of a veteran asleep. He slumbers, with his head against a tree and his hands folded over his knees, and he dreams of those "Away down on the Suawnee River"—"where de ole fokes stay." It is a capital thing, and should be copyrighted.

A New Model Photographic Association.—Our friends, the French, realize the advantages of the photographic club, and the strength which photographers draw from union. There is forming in Paris, largely under the auspices of the journal *L'Amateur Photographe*, a new society which promises to be one of the most influential and efficient associations of the sort in the world. The project is worthy of notice, as besides being of interest in itself, it sets forth in a strong light the benefits of photographic coöperation.

The *Photo Club* of Paris is to be not only a place of meeting, but an atelier and a laboratory, perfectly fitted out, and furnished with all the apparatus which, from its cost, too special character, or the space it occupies, is out of the reach of the ordinary amateur. It will be an academy of photography, sitting in judgment on each new discovery in the art-science, and advancing it by united work and experiment; publishing and diffusing the best processes and the formulæ most to be recommended. It will also place within the reach of the worker the material for processes still in the experimental stage, not commercially obtainable, such as the orthochromatic plate and the hydroquinone developer, and that under skilled supervision.

The club sets forth as follows the advantages it offers:

A skylight, and a laboratory for development, with aid from experienced colleagues when necessary.

A staff of employes capable of taking charge of all the more mechanical operations. Plates and paper of standard quality at trade prices.

Discussions, lectures, and lantern talks, technical and æsthetic.

Excursions in company, exchange of prints, etc.

Exhibitions, with medals for the best work.

Albums of the best work of the club, with criticisms and advice appended to the views by the artists and photographers, members of the club.

A library with the photographic journals.

Consultations, in case of difficulty, with expert members.

Many of these advantages the members of our amateur societies have long enjoyed, though perhaps not on such a scale as is projected by the French association. If the scheme is carried out successfully it ought certainly to bring great benefit, not only to French photography and the workers therein, but also to the craft in general. Such a body of earnest and intelligent amateurs, working together and taking notes of and following up every new discovery, striving to reduce photography to a science in every department and item, should indeed accomplish some decided advances by their labors.

The jury of the Vienna Amateur Exhibition is composed of the following mentioned gentlemen: W. Burger, Prof. Dr. Eder, Alfred Baron de Liebieg, August Chevalier de Loehr, Prof. Fritz Luckhart, Dr. Federico Mallmann, Charles Srna, O. Volkmer. Charles Srna, President.

"Forgotten," but not "Gone."—One of the largest exhibits and the largest gentleman at the Minneapolis Convention, came from the house of Messrs. Smith & Pattison, Chicago, Ills. The exhibit was of their Quadruplex Enameller—"The King of Burnishers"—and the gentleman was Mr. T. W. Pattison in person. A large number of the "Quadruplex" of all sizes, for oil and for gas, were there, together with a fine array of photographs which had been submitted to the polishing influence of the "King." It was a brilliant show to be long remembered by those who saw it. We saw it and made note of it, but somehow our printer let his types miss it in our regular report. We must add that Messrs. Roberts & Fellows, Philadelphia, printers of "Our Picture," have added a "Quadruplex" 18-inch to their outfit, and very soon we shall give our readers examples of burnishing well worthy of a "King"—then you can indulge in your own reflections concerning it.

The Woman's World, edited by Oscar Wild. Cassell & Co., Publishers, New York. The

August number of this splendid monthly exceeds all former issues. In fact, the *Woman's World* has been growing in beauty and interest and artistic quality ever since its initial number was issued. The current number contains about a dozen excellent papers and twice as many engravings, treating on a variety of subjects, reaching from the toilets of the ladies of ancient Egypt to the manufacture of poplins and the knitters of fabrics in Ireland, all contributed by ladies.

It will make a splendid addition to the reception-room table of the photographer and artist, because it provides so much instruction and beauty as well. Moreover, the photographer will find here and there a study possible and well worthy of production in his studio. For example "The Spinner of the Rosses" on page 404, provides a bit of *génre* that is first-class in conception, composition, light and shade. We recommend it to the photographer as a trial piece. There are some children's pictures, also, which supply suggestive attitudes for the child photographer.

The *Woman's World* is printed on beautiful paper, and is supplied at $3.50 per year, or 35 cents per number.

A NEAT 50-page pocket price-list of supplies in every-day use in the photo-establishment and by the amateur has just been issued by WILSON-HOON-CHEYNEY Co., 910 Arch St., Philadelphia. It should be consulted by photographers previous to making up their orders, and will be found very useful.

A PHOTOGRAPH of the "Belle of Minnetonka" with the attendants upon the convention aboard, was taken by Mr. T. W. INGERSOLL, of St. Paul. The prints are 75 cents. He promises to give to the P. A. of A. the first $25.00 realized on their sales. A generous offer.

A GOLD-HEADED CANE and $50 were presented to Treasurer G. M. CARLISLE by a number of his admiring friends. Speechmaking, mutual promising, and much goodwill were the accessories of this pleasant affair.

FIRE.—Mr. CHAS. T. POMEROY, Kansas City, Mo., suffered much loss from water caused by a fire in his printing-room July 18th. He has our sympathy.

CORRECTION.—In Mr. DRESSER'S article in our issue of July 21st, page 446, the formula for keeping pyro should read: Pyro ½ oz., metabisulphite ½ oz., water 10 ozs. (No potash.)

MESSRS. CHAS. COOPER & Co., 194 Worth St., New York, issue their price-list of chemicals every month. They should be regularly subscribed for by all photographers. They are sent without charge. The list includes everything from acid to zinc. Also ask for an engraving of their splendid factories at Newark.

MR. D. B. VICKEY, the veteran photographer at Haverhill, Mass., after twenty-five years has decided to admit some young blood into his firm, and has received his former operator, Mr. E. A. REED, as partner. Much success to them.

THE next meeting of the Southern Tier Photographers' Association will be held on August 30th at Sutton's gallery, Hornellsville, N. Y. Neighboring photographers are invited to membership. Mr. A. B. STEBBINS, Canisteo, N. Y., is Secretary.

MR. E. E. BROWNE, Asheville, N. C., has made our study as enjoyable as a Swiss valley by a great number of his lovely views on the French Broad and from other sections of his state. Mountains, rivers, trees, valleys—all are chosen with splendid taste and photographed with great skill. We rarely see such a number of views with such an average good quality all through. We know what climbing is involved to secure a collection like this, and warmly congratulate Mr. Browne upon his successes.

MR. E. J. WALL, in his admirable serial Dictionary of Photography, running on now in the weekly numbers of the London *Amateur Photographer*, under the letter P., says of our new book as follows:

PHOTO-ENGRAVING. Numerous processes are in every-day use, in the best of which the action of light upon a bituminous film is taken advantage of. As these processes are hardly within the scope of the general run of amateurs, no further mention will be made. The best handbook on the subject is W. T. Wilkinson's *Photo-Mechanical Processes.*

ENCOURAGED by the cordial reception given to the *Art Review*, the editor and publisher (Mr. GEO. FORBES KELLY) will begin in September next a new art periodical, entitled *The Art Courier*, issued twice a month, or twenty-four times a year. This publication will aim to give the art news of the fortnight, presented in readable style, with brief editorial comments. Each number will have, as its art supplement, a photogravure, and these twenty-four plates will be

furnished with the letter-press for the low price of $4.00 a year. It is the intention of the publisher to make the *Courier* a wide-awake, popular periodical, of value to everyone at all interested in the current art events of the day.

Mosaics, 1889. — *Photographic Mosaics* for 1889 is in process of manufacture, and all persons who have anything to say for the good of the craft are invited to contribute to its pages. Judging from the sales of the 1888 edition we may hope to send out the largest number ever issued. A bound copy goes to each contributor. Operators are especially invited to contribute.

The annual dinner and excursion of the Photographic Section of the American Institute is announced at Brighton Beach Hotel on Tuesday, August 21st. We hope to report "great success" in our next.

O. H. Peck, the leading wholesale dealer and importer of photographic supplies, issued a souvenir giving the order of exercises at the convention, and made all welcome to his store. His 1888 catalogue, just published, is a model of neatness.

Mr. W. G. C. Kimball, Concord, N. H., has recently opened a new and splendid establishment, fitted and accoutred with all the modern elegancies, embellishments, apparatus, and accessories, and proposes to photograph the populace there until he is at least as old as his father, who made daguerrotypes in Concord as early as 1845.

A Fine Idea: Prizes for the Employés.— Would it not be a good idea, at our next convention at Boston, to give a few prizes to the employés? Say a gold medal for the best retouched negative, and a gold medal for the best print. Then the printer that receives the medal should publish the formula that he worked by. These pictures should be made of the same subject, and, I think, that one of our dry-plate manufacturers will make the negatives for the Association, so that they will be from the same subject, light, and time. I think that by offering such prizes our employés will take more interest in their work, and at our next convention they will be better represented than heretofore. Hoping to hear others on this subject, I remain respectfully, Will G. Stuber, 434 East Market St., Louisville, Ky.

We heartily endorse this scheme, and hope the Executive Committee will work it out.

Another Fire.—We regret to hear that the gallery of our old friend and subscriber, Mr. E. M. Van Aken, Elmira, N. Y., was totally destroyed by the recent fire in that city. Some kindly expert carried his back volumes of the Philadelphia Photographer out into the street, and they were saved. Such wise discrimination is not usually shown at photographic fires.

The *International Annual of Anthony's Photographic Bulletin*, 1888, is ready. The editors are W. Jerome Harrison, F.C.S., of Birmingham, England, and Arthur H. Elliott, Ph.D., F.C.S., of New York. The publishers are Messrs. E. & H. T. Anthony & Co., New York, and Messrs. Henry Greenwood & Co., London, are the English agents. This work is an important one. It is not modelled after *Mosaics*, nor after Scovill's *Times* Annual, but after the English year-books. In this respect it loses its "International" character. It contains 643 pages of reading matter, contributed by the wonderful array of authors from all parts of the world, whose names are given in the list advertised elsewhere. These contributions include almost every topic ever treated in our art. Many of them are rather lengthy, and some can have no interest for American readers, but the majority of them are terse, pointed, practical, and of a wise length for a year-book. To all these the editors have added a lot of the usual tables for all sorts of purposes, and a number of full-page pictures illustrating the excellences of Anthony's bromide paper and the various printing processes. Of the last, one by the Ives process, and one from a negative by Mr. H. McMichael of "A Lady Fair," which appeared as "Our Picture" last March, and by the photogravure process, are the best. The editors are to be complimented highly upon their indefatigable industry in collecting so much splendid material together. No one but a bookmaker knows how much work this involves. We are glad to see that the art side has not been neglected. In his article Mr. Harold Baker says: "My advice, then, to a youth who intends to become a professional photographer, is not to devote his leisure time exclusively to the study of practical chemistry, but chiefly to art." This is the keynote of the whole, and we may all follow it. There are fifty articles we should like to quote words of wisdom from. But we must refrain. Ten thousand copies of this excellent work are printed, and we predict that they will all be sold and doing good before the usual annuals come along. Everybody should have a copy. Price, 50 cents.

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

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Address, H. L. R.,
1125 Chestnut St., Philadelphia.

The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckian would say, good whisky. Send the book on Photo-Engraving.

FRANK THOMAS,
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FOR SALE.—As they are, six direct solar cameras, 14 inch condensers; will print up to 25 x 30. Lately in use at Albert Moore's. Also a library of photographic books. Cheap for cash. Address,

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MARION & Co., Publishers, London.

The well-known author says, "The object of this work is to give practical instructions in the working of all processes which are in actual everyday use at this date."

The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

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Edward L. Wilson, the well-known and popular Photo-Book Publisher, of No. 853 Broadway, New York, has just issued a very valuable and important work on Photo-engraving, Photo-etching, and Photo-lithography. The publisher and author claims the book treats "mainly upon an entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them." It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Mr. Wilson's own contributions and translations from the French and German, make the new book very thorough and practical, and also make the whole of the processes very plain. The book is 6¼ x 8¼ inches, illustrated, 180 pages, and cloth bound; price $3, post paid, and is divided into the following departments:

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed.

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The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckying would say, good whisky. Send the book on Photo-Engraving.

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Professor W. K. Burton's Book on Photo-mechanical Printing Processes continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated, and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.—*Anthony's Bulletin.*

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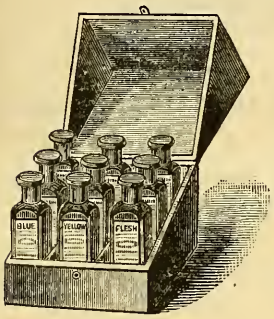
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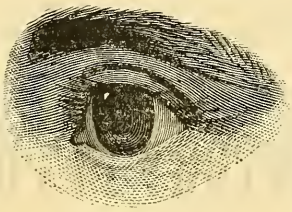
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It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

A good index, fairly well cross-referenced, makes the book useful for quick occasional reference.—*Amer. Architect and Building News.*

A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better —DEAN WRIGHT, in the April *Boston Academy*.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text book of the Art. By Edward L. Wilson. Published by the Author. New York, 1887. Price $4. Pp. 528.

In making the above claim that this work is a complete text book of the art of photography, the author has not overstepped the mark, for we have seen nothing to compare with it in clearness and attention to details and manipulations. The author's easy style is already well known to those interested in the subject, and goes a long distance toward making the "Quarter Century" an interesting volume, entirely independent of its large store of information. After an outline history of the subject, the theory of photography is treated of; then follow the subjects of light, the camera and lenses, the diaphragm, artistic principles, indoor and outdoor work, chemicals needed, negative making, printing, photo-engraving, slide making, etc., etc., with a host of details worked in under the proper headings. Isochromatic photography is treated of in a separate chapter, and its special value in certain classes of work noted. The more prominent features of the work are the chapters on lenses, art principles and the making of paper and film negatives. The treatment of this last subject will be found of especial service to the travelling amateur, who is often deterred from adopting the use of flexible negatives simply because he can find little reliable information concerning their peculiarities. We know of several cases of amateur enthusiasts in the art who have tried the "films," and finally returned to the old stand-by glass plates, because of difficulty in handling the later process. By the light of such information as Mr. Wilson has supplied, this difficulty largely disappears, and the process is simplified by giving a detailed understanding of it. The arrangement of the book is exceptional in one respect that greatly increases its value for general work. The main text is supplemented by foot notes in smaller type, comprising quotations from all our leading writers on the subject, and in many cases containing original methods that have not yet become generally known to photographers. This collection Mr. Wilson has been in an excellent position to make, as editor of the *Philadelphia Photographer*, and the readers of the "Quarter Century" will be more than repaid by a close comparison of the methods presented.—*Iron*.

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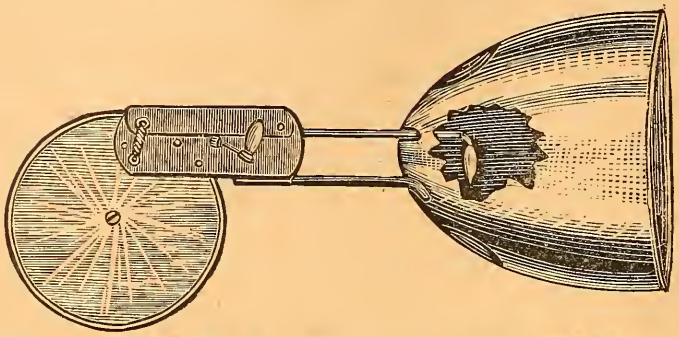
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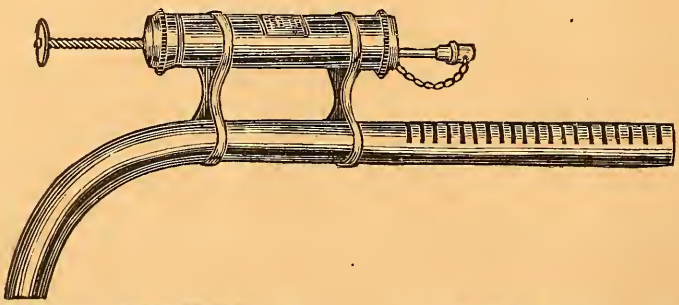
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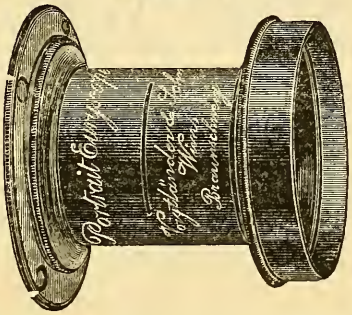
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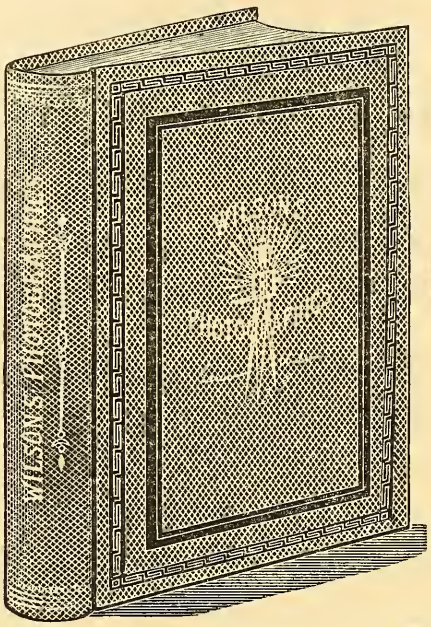
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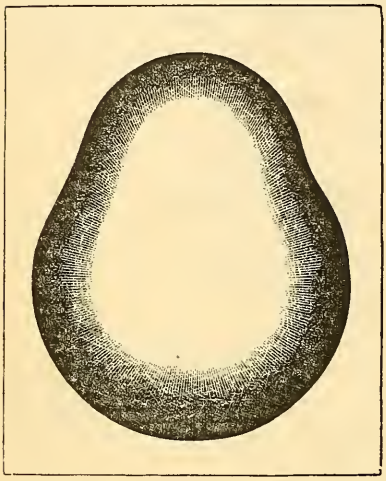
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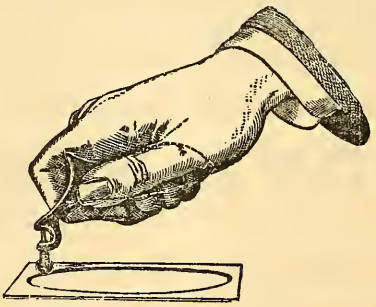
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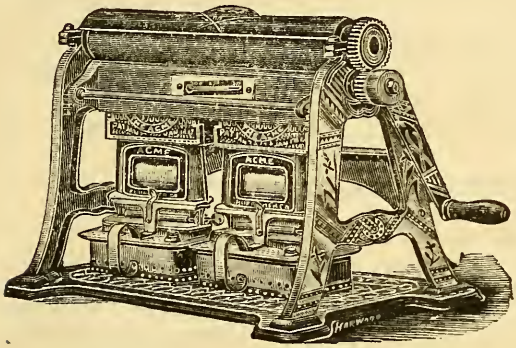
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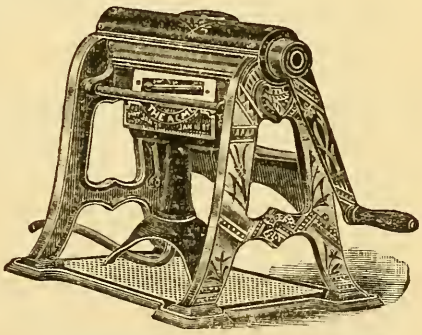
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STUDY ON ARISTOTYPE PAPER

Paper from E. Liesgang, Dusseldorf, Germany.

THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. SEPTEMBER 1, 1888. No. 329.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 454.)

Window Transparencies.

You must not think when the year is rapidly drawing to its close, the trees stripped of their beautiful foliage, and the sky covered with low, dark, lowering clouds, or the rain beats furiously down in gusts and torrents, that the days of your photographic pleasures have ended for the season, and that you must wait for a new spring to come in all its beauty for a renewal of your enjoyment. Not so, for you have in the results of past happy moments a fruitful source all through the winter of intense enjoyment. I hardly know of a more fruitful source of calm pleasure to oneself and friends than, after looking over the store of negatives that have accumulated as the result of your summer work, of picking out such ones as may take your fancy, either from their intrinsic beauty or from the fond and pleasant recollections that they may recall, and producing from them glass positives, window transparencies or lantern slides, as you may elect.

As the technical quality for these two purposes is by no means the same, we will turn our attention to window transparencies first. An impression seems to hold good that a transparency which appears pleasing to the eye when viewed by transmitted light is all that can be wished for, for the lantern slide, but this is by no means so. A transparency for the window or used as a screen for the lamp should be full of detail, and color given to every part of the film. On the other hand, the lantern slide needs to be much more transparent in the shadows, and the lights should be as near clear glass as possible. The proof of a good slide is the effect produced upon the screen, and not the light or one's perception of color. A good transparency hung up in a window or before a lamp always attracts the attention of even the most unobserving, and it seems to cause the gaze to return from time to time to it, for it is without doubt the finest production of photography. It is an undeniable fact that glass positives are more pleasing to every one than a paper print from the same negative. It may be an optical illusion, but at the same time it is a real difference, caused doubtless by the fact that as we look through the picture and see the scene more nearly as it appears in nature we have a truer perspective and more solidity given than what is presented by a print mounted on a flat cardboard. It retains, too, the very finest details of the negative on its sensitive surface, and the subject is reproduced with the least loss in printing. These transparencies are produced either by contact or by enlarging or reducing by the camera, with the aid of daylight. Always choose a very slow plate, and a negative slightly denser than one required to make a good silver print, and one full of details. The contact printing may be accomplished by diffused sunlight, gas, or petroleum lamps. I like

the German student's lamp, with its porcelain shade, better than any other lamp for this purpose. To be sure it may prolong the exposure a second or two, but it gives you softer tones. The requisites for this work are a deep printing-frame, a size larger than the negative to be used, with a flat glass, clear, clean, and free from scratches and bubbles, for the bottom of the printing-frame, and red enamelled label- or blue-black needle-paper for masks. Place upon the glass bottom a mat of one of the papers mentioned above, so cut as to give straight margins of clear glass on the finished glass positive. These mats or masks can be cut rectangular, oval, or any shape that may take your fancy and improve the picture. And upon this mat carefully lay your negative, facing upward, film side up. Upon the negative place the sensitive plate facing downward; in other words, film to film. It is always well to place on the back of the sensitive plate a pad of dark material, which not only holds the plates well together but also prevents any reflection that might otherwise occur. Close the printing-frame, and expose to the light, if artificial, ten, fifteen, or more seconds, according to the density of the negative. Before developing it is well to lay the plate in a dish of pure water for a few moments, and by a camel's-hair brush carefully remove any air-bubbles that may cling to the plate. Here I must reiterate the necessity of perfect cleanliness. If you desire to make transparencies that you need not be ashamed of, you must be more than usually careful in all the details of manipulation. Trays and all utensils and hands must be perfectly free from the slightest trace of hyposulphite of soda. Dense black spots are suddenly developed when the touch of a single drop of the ordinary hypo solution falls upon the film.

There are several developers more or less highly recommended for this process. To save both time and space I would refer you to Ripley's addition to his negative formula, Carbutt's, and lastly to Prof. Newton's hydrochinon, given elsewhere. It is best to develop slowly, and the fixing must be thorough. The plate must remain in the hypo bath some time after all the milky white appearance has gone from the back, and do not as yet expose it to white light. After the visible bromide of silver has been reduced, there yet remains a double salt, which though invisible is sensitive to light, and if left in the film will discolor it. This double salt is soluble in hyposulphite of soda, and if the plate be left long enough in the fixing bath it will dissolve out of the film. It is well to have two fixing baths. After all visible traces of the bromide of silver have disappeared, then place the plate without washing into the second bath, and let it remain ten minutes, which will be sufficiently long to accomplish the entire removal of all bromide of silver. After washing a few minutes in running water, place the plate in the clearing bath for one minute, and then wash well, going over the film with a soft tuft of cotton, a camel's-hair brush, or your fingers to remove any spots or particles that might otherwise dry on the film. The back when dry can be easily cleaned by a tuft of cotton moistened by weak ammonia.

Mounting.—There are various ways of mounting transparencies, but undoubtedly the finest effect is obtained by framing them with etched ground-glass in neat nickel-plated frames that can be obtained from the dealers in photographic materials. The ground-glass is placed against the transparency rough side to the film, and the two plates secured in the frame, or you can dispense with the ground-glass and flow over the film a thin coat of ground-glass substitute (Hance's), or a varnish made as follows:

Sandarac . . .	90 grains.
Mastic . . .	20 grains.
Ether . . .	2 fl.oz.
Benzole . . .	1 to 1½ fl.oz.

The proportion of the benzole added determines the nature of the mat obtained. The addition of a small quantity of some one of the diamond dyes to this varnish often produces very beautiful and striking results, and enhances the beauty of the picture The dye is dissolved either in ether or alcohol, the amount to be used must be determined by experiment and experience.

Transparencies made with the gelatino-chloride plates (Carbutt's) have proved the best in my hands. They are very beautiful

from the variety and gradations of tone that can be obtained on them, depending on the length or shortness of exposure, and the strength of the developer—short exposures and a strong developer producing vigorous transparencies with rich velvet-black tones; long exposures and a dilute developer giving warm, brown tones with brilliant transparency of detail in shadows and fine gradations.

(To be continued.)

DARK-ROOM PRACTICE.*

BY J. HEGYESSY.

Our esteemed President bestowed the honor upon me to invite me to write a paper on our dark-room practice, only some "practical bits," as he called them, in order to have some questions asked and discussion had on them. I feel very honored, indeed, of the distinction, but I do not feel myself up to the requirement, and especially in an assembly of so many of our illustrious brethren, who have won a world-wide ruputation in the craft. Our President's wish is an order, though, for me, and I will try my best to relate some practical observations of my own, without guaranteeing them to be strictly in accord with chemical law, for I do not pretend to be a chemist.

Our President wants me to speak about our dark-room manipulations. I will, therefore, strictly adhere to his wish, and ventilate the dark-room. Ventilation is, indeed, the very first item to discuss, for it means health. With the advent of dry plates, though, this question is brought to a second degree of importance, except where still the wet process is used for copying purposes, or tintypes are made; for we do not stay very long in the dark-room, and we have no more poisons like cyanide and others to deal with and to undermine our health.

It is good policy, though, where room and situation admit it, to use any kind of ventilation which will close out white light and let come in som fresh air, especially on hot summer days. If constrained by space and situation, leaving open the door of the dark-room when not in use settles this part of the question.

The light in the dark-room is then the first vital question. I believe in plenty of it, provided it is non-actinic enough to allow handling the plate without fear of fog.

I cannot commend entirely daylight illumination for the dark-room, because of its changeability at all hours of the day; neither can I commend lantern light inside the dark-room, though the lantern has the advantage over the daylight of giving a steady light, which enables the operator soon to become expert in judging the intensity of the negative; for it has the enormous drawback of its insupportable heat in summer, besides the smoke and smell at any season are injurious to the health. I am strongly in favor of artificial light of any description, provided it is fixed outside the dark-room; better so, if you can manage it from the inside, according to the amount of light you are in need of. A gas jet or coal-oil lamp, fixed far enough from the dark-room window not to break the glass by heat, will answer the purpose.

Ruby glass or paper, although injurious to the eyes, is still the safest (if we are bound by the space to work close to it), according to my practice; but, considering that the light increases or diminishes in the ratio of the square of the distance, by going further away from the light, we might use a light less safe than ruby—*i. e.*, orange, yellow, or cathedral green. I prefer one, two, or all three of the latter combined, according to the size of light and dark-room.

With the very sensitive plates of our days, I find it necessary to begin developing away from the light, or to screen the light down by a cambric curtain of orange color, and as soon as the image appears, I admit more light to fully ascertain the progress of the latent image. The very start of the latent image enables the observing operator to judge the amount of exposure. If right or wrong here, too much attention cannot be paid to the coming negative. On this very first care or carelessness depends entirely the quality of the future picture. The

* Read at the Minneapolis Convention of the P. A. of A.

maxim, "Better late than never," is entirely inapplicable here, and must be kept in mind as altogether out of place. It is, according to my notion, impossible to give the effect to a negative by any known "after-treatment" which you can give to it by judicious developing.

To ascertain the right exposure of a plate I find it a good practice to start with the formula found to answer the best for a rightly exposed plate. This seems to me a practical guide to recognize the amount of exposure received, and it can easily be modified to give the effect sought for, for an overexposed plate can be developed to yield the effect of an underexposed plate, by starting with too much pyro or bromide in the development, or *vice versa*, and ignorance or carelessness in mixing the components of the developer, might deceive you in the treatment of the negative.

A good dark-room man must, of course, understand how to develop a plate without any knowledge of exposure received; I would even say, without the use of any scale to weigh his ingredients, but I will only speak of our everyday practice.

I believe strongly in slow developing, *i. e.*, rather weak developer, for many reasons. Should the negative show signs of underexposure we are in the very best way, for it is generally known that a diluted developer precipitates the bromide of silver acted upon by light in a finer state of metallic silver, which forms the latent image and insures a good range of half-tones, softness and roundness with atmospheric effect; the developer penetrates slowly but gradually, and forms the picture deeply in the film, which gives bright and sparkling negatives. It is a known fact that cold solutions act slower than warm ones. Heat can, therefore, safely be considered an accelerator. This reason holds good with underexposed plates. In an underexposed plate, as everybody knows, the shadows are tardy to respond to the action of the developer. Therefore, by applying heat to them, we are able to bring as much out of them as the light fallen upon them gave impression to the sensitive film. This is found very practicable by simply breathing upon parts of the negative. Another way equally good, is to throw the solution from the developing tray into the graduate, and pouring it gradually back upon the plate over the part that you wish to give more intensity and detail.

To produce a good negative in every respect, we must have patience, and not condemn a plate because it develops slowly, for the more sensitive a plate is the slower it has to be developed. A slow plate stands a stronger developer. I think it is wrong to say a good plate has to be fully developed in three minutes. No time can be laid down as a rule to produce a good negative. Before exposing a plate, a good photographer takes all the time he needs to study his sitter, to find the best outlines of the face and the pose and light to suit the subject, in order to obtain a perfect picture. Give your dark-room man the same chance of study and succees, by giving him time. Do not rush him through by saying, as I have heard so many times, "My best pictures came out like a flash, and were developed in three minutes," for the statement, if true, was an exceptional one, and cannot be applied to every negative and every subject, although it is a fact that a plate which has received an exact exposure takes less time to be developed than a plate which needs doctoring. If the exposures were right, you have lost nothing by slowly developing. You have the pleasure of seeing your negatives building up with sparkling effect. Should the exposure have been a too prolonged one, you are again in the only safe way to save the negative from spoiling, for you have plenty of time to modify your developer to suit the exposure without any danger that your plate will have developed too far during that time. I say, therefore, "go on slowly." "*Chi va piano, va sano; e chi va sano, va lontano*" (who goes slowly, goes safely, and who goes safely goes far), says an Italian proverb, which cannot be better employed than in developing.

A strong developer pecipitates the bromide of silver distributed, if I dare say so, by the action of light, in a coarse grain; the picture flashes out; the developer does not penetrate the film, and, though the negative looks quite dense, we are astonished to find after fixing, a flat and thin-looking negative. The depth of tone in the nega-

tive is lost. It is exactly the same way as in toning prints very quickly with a good deal of gold, when the gold did not penetrate and stood only on the surface of the picture. Though the print looks quite blue it changes to a disagreeable red in the fixing solution, and proves only that we are deceived.

I know I will raise a good deal of contradiction among our brethren, and perhaps more from the plate manufacturers themselves, with the following statement: I do not believe much in the virtue of restraining an overexposed plate with old developer, or in the use of it to replace the bromide. My practice has taught me that the use of old developer gives, of course, more intensity, and makes developing slower, but at the expense of clearness of the shadows. To ascertain the truth of my assertion, I beg you only to give the matter a comparative trial, by cutting a plate in two and developing one-half with a mixture of old and fresh developer, and the other half with a little more pyro and bromide in the new developer. I am convinced you will decide in favor of my statement. You will find in the latter case beautiful clearness and definition in the shadows, with purer high-lights in comparison with the first half.

Softness and gradation from the high-lights to the deepest shadows, are considered a fine chemical quality in a negative, and with reason, for the effect adds so much to the beauty of the finished picture. I found no difficulty in getting the said effect by stopping developing a trifle sooner than I would consider fully developed, and, without draining, putting the plate in a tray of water merely to cool the plate before washing, or wash the plate under the tap with a gentle, slow stream of water. In both cases, the developer being very much diluted or washed out gradually, the dilute developer in the film will continue its action as long as an atom of it is in the film, and, by the same law and effect of diluted developer, will act with benefit on the shadows, and form those so highly praised half-tones and gradation in light and shade. You will easily recognize by this method the difference gained in intensity, and the beautiful effect obtained after the plate is fixed.

The temperature of the chemicals, too, merits our attention, and a good operator will always look out that his stock solutions do not freeze in winter, and his developer not get too warm in the tray in summer. Frequent change of temperature acts destructively on solutions, therefore, it is well to keep the developing bottles where frost cannot reach them in winter. Should the dark-room not be kept warm, it is easy to keep them well enveloped and covered in straw. To prevent frequent changes of temperature I do not advocate keeping developing solution on ice in summer, unless it can be done night and day, but I prefer to dilute my developer before use, with ice water, and if possible put a piece of ice in the developing tray to keep the developer from getting warm by the imprisoned warm atmosphere of the dark-room. At the last year's convention in Chicago, our esteemed President, Mr. G. Cramer, gave you a description of how to get rid of frilling in summer, and insuring a perfectly hard film, not easily scratched, even with the finger-nails, and standing a washing of twenty-four hours and more. This method has been practised by me for many years, and I can recommend it to the fraternity with much assurance of success. The enormous amount of alum in the hypo may not be in accordance with chemical laws, but I am strongly convinced of its practical value.

There remains yet the question of reducing and strengthening. The safest way to reduce a negative that I know of, is undoubtedly hypo and ferricyanide of potassium. Any local reduction can be done with equally good results with a soft brush. By washing at the tap, after each application, we insure evenness and local reduction. Much has been said and written about strengthening. There are thousands of formulas, and without doubt all good in skilful hands; but the simplest, it seems to me, is the one with bichloride of mercury mixed with bromide of potassium, and fixed with sulphite of sodium instead of aqua ammonia. Stronger ammonia imparts to the negative an unpleasant brownish-yellow color, which injures a good deal of its printing quality. Sulphite of sodium does not change the color of the negative at all, is more stable and less

injurious than ammonia, and, therefore, preferable; but the negative has to be removed as soon as fixing is complete, otherwise the sulphite of sodium will reduce again the intensity of the negative. This intensifier has the advantage to intensify more the high-lights than the shadows in the proportion of bromide used. A good way to strengthen a very flat-looking negative is, I found, first to reduce the negative with ferricyanide of potassium and hypo, as above described, and then strengthen, as said further up. If only moderate strengthening is required, drying the negative by heat is a handy intensifier; but you must not put the negative too near the stove and melt the film, as it happened to me once last year at F. W. Guerin's.

IN UNION THERE IS STRENGTH.*

BY C. GENTILE.

How better can the fact be demonstrated that in union there is strength than by the intelligent assembly now before us? There seems to be so little unity among photographers, that it is a glorious sight to see gathered before us a number of ladies and gentlemen such as we now meet. Throughout the country those of us who travel around, well nigh in every city, know that there are to be met croakers who are continually preaching that our Association will not hold together for any great length of time. Let us hope that such prognostications will prove to be without foundation. To-day the photographic business throughout the world, we may as well say, would not be in the precarious condition it is were photographers to act more in concert in conducting their business for their own mutual benefit. Instead, as a rule, they stand more disunited than ever. In every branch of business to-day we see that "trusts" or union leagues are formed to make powerful combinations for the purpose of keeping up prices. If photographers cannot form a league to keep up prices, at least they might try to unite for mutual improvement, mentally and socially, and it is to be hoped that such may be the case from meetings like the present. It is to be regretted, however, that there are present so small a number of those interested in photography, since there must now be over one hundred thousand people connected with the profession, directly or indirectly, in the United States.

To illustrate what a weak bond of unity there is among photographers, we have only to call attention to the fact that a recent attempt to draw together an international convention of photographers, which was to have been held at Brussels, Belgium, collapsed most dismally after two years' hard labor and a promulgation of some very extraordinary literature, showing conclusively that there is not sufficient of what the French call *esprit de corps* among the followers of our profession to put themselves to much inconvenience and expense to endeavor to come to an unanimity of opinion on the many subjects of vast importance to the welfare of photographers and photography.

It is to be hoped that the deliberations of this assembly may have a tendency to make the bonds of unity among the fraternity more binding, and that our *confreres* may realize that the stronger we are in numbers, the greater will be our influence for good. If we are to ask concessions from fire-insurance companies, or favors from railroad companies or hotels, the reasonableness and weight of our argument would be greatly increased and our influence with them correspondingly strengthened if our Association numbered thousands instead of hundreds. Therefore, the advantages to be derived from unity are manifold. How much better it would be for all if we were more unanimous in making an exhibit. There is everything to be gained by unity of action, as will be demonstrated to you at this convention.

It is sincerely to be hoped that these annual reunions may tend, eventually, toward binding us together in stronger bonds than have hitherto existed among the followers of photography. It is to the advantage of all concerned in the profession of photography to see that everything is done to encourage our Association and increase its numbers. By meeting together in friendly discourse our views of humanity are broad-

* Read at the Minneapolis Convention of the P. A. of A.

ened and we become more enlightened; therefore, we should all be believers in the motto "In union there is strength."

PHOTOGRAPHIC OBJECTIVES — FACTS AND FALLACIES REGARDING THEM.*

BY EDWARD BAUSCH.

THE literature on photographic optics is exceedingly meagre, and that which is open for study is distributed mainly in the form of papers and articles written in photographic journals.†

The terms "depth of focus," "distortion," "chromatic and spherical aberrations," "visual and chemical focus," are used rather promiscuously, and, I fear, not always understandingly.

It is not my purpose to give you a treatise on optics pertaining to photographic lenses, but to mention those terms, and give explanation of them, which meet one in pursuit of photography, and draw attention to some things which, from my experience and a varied correspondence, I am led to believe are not fully understood by all. The diversity of qualities pertaining to lenses for photographic purposes is apt to be confounding, unless a person has the benefit of extended experience or study on the subject, and there is no question that the assumption of knowledge where it did not exist, or relying on statements which were not correct, have led to many errors of judgment, which in turn have been the cause of disappointments, prejudices, and loss. I therefore think that any statement of facts which are incontrovertible, because they are natural laws, will not only be fruitful of a better knowledge, but may in time lead to some unity in the modes of examining and testing objectives, for I venture to say that there is a necessity for this, inasmuch as different persons follow different plans, giving varying results, and few of them accomplish the contemplated result.

It may be best to say at the outset what the qualities are which are desired in a first-class photographic objective, and which, with many others, are the problems for the optician to solve. They are as follows: Exact coincidence of visual and chemical foci; a formula involving such glass and curves as will give the utmost freedom from spherical and chromatic aberration; such a relation of glass and curves as will avoid internal reflections and consequent "flare" or "ghost"; length of focus; diameter of lenses; absolute homogenity of glass, or freedom from striæ or veins; grinding or polishing the various surfaces so that they shall be strictly spherical; absolute centring of lenses before and after mounting.

I cannot think that I can better show the importance of these various factors than by leading you through the process of completing a lens, omitting the minutiæ of work, and thus also showing you the difficulties which beset the path of the optician in his endeavors to reach the result.

We will assume that he desires to make a medium-size objective of the form which is principally used to-day—a system of two symmetrical combinations—and that he has laid out the formulæ on which he intends to construct it, in advance. He has in his possession four plates or disks of rough and unsightly glass, two of which are crown and two flint, which are to be to him the cause of disheartening failure or gratifying success. If he has any experience at all he will use no other than such which is warranted by the glass manufacturer, because otherwise he will find considerable difficulty in obtaining perfect glass. The glass comes from the manufacturer either guaranteed or not; in the latter the manufacturer assumes no responsibility, while in the former he does, so far as the refractive index and most glaring faults are concerned. If they are of guaranteed form, the disks have faces ground and polished on the edges on opposite sides, by means of which the maker has carefully tested the glass, and by which means the optician may do the same.

* Read at the Minneapolis Convention of the P. A. of A.

† In this respect our talented young essayist is in error. He has overlooked the exhaustive optical lectures of his lamented predecessor, Mr. Zentmayer, reprinted in *Quarter Century*, with forty illustrations, and forty pages of information on lenses and their use, besides.—ED. P. P.

I would say here, in parenthesis, that none of this glass is produced in this country, and none of the glass manufacturers with whom we have yet come in contact, have shown any inclination to undertake to make it. We hope, and feel confident, that the time will come when it will be made within our borders, and when so, with the natural facilities at our disposal, we feel certain that we shall obtain a higher and more satisfactory result than exists to-day. The cost of the glass is now a very important factor in the price of the lens. The glass itself must, of course, conform to the formula, and often the formula must conform to such glass as it is possible to obtain.

Any variety of crown or flint may be obtained, but it has been found that the light flints and crowns give the most satisfactory results. Flints are usually the outer lens of double combinations, and when heavy are exceedingly soft, and subject to oxidation.

The optician now begins to abrade the glasses, giving them approximately the form he wishes them to have, and then begins the process of grinding and polishing. Although this is done on the same general principle, the details vary with different opticians, and although the same result may be and is accomplished in different manners, it is safe to say that if one were to follow the plan of another he would fail. There is a peculiar touch or feeling in doing this work which it takes years of practice to acquire, and even then I find that a person must be adapted to it. One might give the method of procedure down to the minutest detail, and this has often been done, and for all that a person might follow it any number of times and still fail.

One thing, however, is true, that few persons have any conception of the utmost exactness which is required in this work. This remark, of course, applies mainly to an objective which is to be of the highest standard, —which, to a certain extent, varies with different opticians according to their skill— and not to such productions as may be called commercial, for here the pecuniary return, and not the excellence, is the paramount consideration. A certain amount of exactness must be observed even in the cheapest forms; but they are not subject to critical tests, and many faults which are not apparent to the purchaser are allowed to pass, and the result is, of course, that they are inferior, varying, and unreliable; and while occasionally one may find an excellent lens among them, no reliance can be placed on them. It has been computed that an error or variation from the spherical surfaces, for instance, so infinitesimally small that there are no mechanical means for determining it (say, of a $\frac{1}{500000}$ths of an inch), will have a noticeable and sometimes disastrous effect in the formation of an image. We all know, from the fact that we have read it often, of the utmost exactness with which a telescope objective must be made, and the claim is generally made that because the image from the objective is magnified by the eye-piece, a greater perfection is required in the telescope objective. I have found, however, that any lack of perfection that is noticeable by an eye-piece, is as pronounced in the camera, and I, therefore, claim, and make this emphatic, that a first-class photographic objective requires as much perfection as that in the telescope or microscope, and no work spent upon it to accomplish this result is lost.

To return to our objective, we will suppose that all the surfaces have been ground and polished. This in practice means considerable. The difficulty of doing the surface increases out of all proportion with the increase in size, and so does the danger of scratching. It is an ordinary event to scratch a surface during the process of grinding and polishing, and nothing uncommon to do so in the last stage of the latter, when the entire work must be repeated. No matter how good a surface may otherwise be, a scratch is inadmissible; not that it does any particular harm, but an optician who takes pride in his work cannot bear it, and the customer who is to pay for it will not accept it.

After polishing, the lenses are put into a lathe, one by one, and centred, that is, the optical axis is found, which we know we have when on revolution of the spindle the two images which the surface gives are stationary. The edges are now ground down to the diameter of the cell in the mounting. The next step is cementing.

This is a delicate process, for although in each step of the work heat has been used, a much higher degree is now required, and the danger of cracking the lenses is increased. It is no ordinary occurrence to lose lenses in this work, or, for that matter, at any point of the progress. Great care must here be observed to prevent the cement turning yellow, and thus disturb the transparency of the lens, and thereby cause loss of light. The lenses are next temporarily fixed in the mounting and are ready to be examined in the camera. Now comes the moment of suspense. Focussing on an object (and for this purpose I consider a large flat screen covered with printed matter containing various sizes of letters, hung against a perpendicular wall, the best), the first thing which comes to our notice is the focal length of the objective. It may be one-half of that which was figured upon, or twice as long. However, if not correct, we make out of how much it varies, and proceed to examine the image.

This may be sharp and brilliant in the centre, and gradually becoming more indistinct as it nears the edge, and may remain indistinct near the edges under any amount of focussing; or it may have the same fading out of the image toward the edge when the central portion is sharp, but this may be brought out clear by change of focus; or the image may be such that it cannot be sharply focussed at any point. There is yet one possibility that the image may be quite sharply defined over the entire glass; this of course is the most favorable condition. After making note of whatever the appearance may be, we proceed to determine the coincidence of visual and chemical foci. As is well known, there are, photographically speaking, two sets of light rays emitted by every object: *The visual rays*, that is, those which form the image on the screen, and which are most perceptible, being made up of the red, yellow, and orange colors of the spectrum; and the *chemical rays*, that is, those which make the photographic image, formed by blue, indigo, and violet, which are the least discernible, and it is a problem of some difficulty to bring both sets to form an image in one plane. To determine this we proceed to make an exposure on a plate. Before doing this, however, we must be assured of three things: First, that the ground-glass is flat; second, that the plate which we intend to use is flat; third, that the plate when exposed will be in exactly the same plane as the ground-glass. I lay great stress on these points, because on them depends a reliable result, and, then, because with many plates and cameras these conditions are not fulfilled. If you will go through a package of plates you will find some almost perfectly flat, others convex, others concave, the deviation being fully as much as one-sixteenth of an inch, and I suppose in large plates even more.

I do not mention this in the way of finding fault with the platemakers, because ordinarily, and particularly when stops are used, it is of little moment, and because it would be almost impossible to furnish selected flat plates at the present prices.

The Eastman roll-holders I have found well adapted, because the film passes over a fixed and flat back which remains constant in its relation to the ground-glass. If the ground-glass is flat, then flat plates should be selected, and if the ground-glass be concave, then plates corresponding to it should be used. I believe that, as a rule, where care is observed, slightly concave glass in plates is used, because they come in this way, and this form favors the lenses. The only thing, however, which should be insisted upon, and which, I am sorry to say, is not always the case, is that the film side of the plates should be exactly in the plane of the ground-glass when it replaces it. To determine this, the following plan, which I think is used by manufacturers of cameras, is effective. Take a straight edge and allow it to rest upon the face of the frame of the ground-glass, which rests against the back of the camera. Cut a small wedge of wood and insert this between the straight edge and the ground-glass as far as it will go, and make the edge in line with the straight edge, when it fills up the space. Now take a plate which is suited to the plate-holder, and which is known to be flat, and place it in this, and by the use of the straight edge and wedge, proceed as before with the ground-glass. It is unnecessary to say that the makes should agree exactly, and if not,

should be made to do so. These precautions are alike necessary for the optician and photographer, whether for the purpose of determining the quality of the lens or for making comparisons between several lenses, and it is a test which every camera ought to undergo. After the plate has been exposed and developed, we may find that although we have a sharply defined image on the ground-glass, the one on the plate is very indistinct, which shows that the chemical foci may be sharper or longer than the visual.

To determine the extent of variation a number of exposures must be made, placing the ground-glass within or beyond the visual focus until as sharp an image is obtained in the negative as on the ground-glass. We now have all the principal data to enable us to proceed with the correction of the lens. First is the focal length, next the spherical aberration, then the amount of distortion, and last, but for the present most important, the difference between visual and chemical foci.

To attempt to correct any one of these qualities will disturb the others; not only that, they are often to such an extent antagonistic that to improve one will considerably augment another fault. It is not within the province of this paper to show you what the likely changes would be which would be followed to improve the objective, but I can indicate what some of the results would be which would arise. For instance, if the visual and chemical foci do not coincide it is evident that the objective is chromatically over- or under-corrected, and if the objective would otherwise give a good image, the inner or cemented surfaces would probably be changed; this might very naturally affect the focal length, which in a telescope objective would hardly be noticed. The focus of the lens might easily be doubled before the proper correction would be reached, and changes would again be necessary to bring the focus to the proper distance, which would again disturb the chromatic correction as well as perhaps the spherical, which latter designates the amount of curvature of the image. Thus, a change of one-sixteenth of an inch in the radius of one of the inner surfaces, which would hardly be noticed in an ordinary lens, might lengthen or shorten the focus of a photographic objective several inches. The changes which sometimes occur are often surprising and inexplicable even to one who is accustomed to them. It may be found that the amount of spherical aberration is so great that no amount of changing will bring it to the proper standard. One means of partially overcoming it would be the decrease in the size of the lens, which would mean that they will admit less light, and consequently be slower. The thickness of the lens which causes the distortion must be accurately determined. However, we will assume that the various corrections are finally combined as far as possible, and the skill of the optician must determine to what extent they will be. It may be impossible to combine the spherical and chromatic aberrations sufficiently to make the former acceptable, and a new series of experiments will have to be undertaken, based on a combination of new glass.

After a lens is completed which meets the ideal of the optician, it may be said, "We can understand that the first lens has involved a great amount of work, but after the completion of the sample none of these difficulties will arise." To a certain extent this is true, but it must be remembered that the optician's work is almost entirely empirical. Each lens is an experiment; there is an individuality in each which cannot be overlooked. A lens is rarely, if ever, perfect when completed, and each one is a special study. There are certain features which rarely, if ever, change when working under the same formulæ and using the same glass, such as coincidence of visual and chemical foci, centring, and size; but others, such as homogeneity and refrangibility of glass, sphericity of surfaces, length of focus, are variable, and often can only be reached after repeated trials, and in many instances cannot be obtained at all.

There is one point which I have not yet touched, and which is of the utmost importance, and that is the sphericity of surface.

Merely to grind and polish a lens is exceedingly simple; to do so and obtain spherical surfaces is extremely difficult. Instead of spherical, a surface may be and often

consists of a series of elevations and depressions.

They may be in the shape of rings, or may be confined to spots, or may radiate from the centre, in which way I have seen them as pronounced as the spokes in a wheel. Heat, even when moderate, when applied to a certain portion of the lens causes the same effect; there are optical tests by which we can easily see the expansion of the glass after the finger has been allowed to rest upon it for a moment. The same effect may be obtained by fixing the lens in the mounting. I have often examined lenses which were so distorted by the pressure exerted on them in the mounting that it seemed almost impossible that they could form even a fair image.

What is the effect when these conditions exist? First of all a lack of sharpness over the plate, and then depth of focus.

An elevation, say, on a convex surface, will give a shorter focus than the focal point for the entire surface for all those rays which fall upon it, because of its short radius; whereas a depression will cause a longer focus, so that instead of all the rays combining in one point there are a series of focal points.

When depth of focus is caused by reason of this fault, it is to be condemned, because it is at the sacrifice of definition, and any lens possessing it cannot be rated as good. Depth of focus, when caused in this manner, is one of the qualities which can be determined without comparative tests, and every lens purchased should be tested to this end. A good means to determine the proper correction of the surfaces is by the use of a diaphragm. Focus for a sharp image on the ground-glass by means of a magnifier with the full opening of the lens, and note this point in a camera. Then rack out of focus and insert a diaphragm sufficiently large that the image can just be distinguished, and again focus by means of the magnifier. If the objective is perfectly correct this point will coincide with the first, and if not, it is, as stated before, a serious fault, because there will be a different focus for each diaphragm.

Depth of focus and speed are incomparable, inasmuch as both qualities depend on the aperture of lenses, assuming, of course, a relatively large diaphragm and focal length; while the former decreases with the increase in the aperture, the latter increases.

Depth of focus is no doubt a very desirable quality, but to obtain it in a legitimate way with high speed is simply impossible.

In two lenses of similar construction, of the same diameter and focus, it will be exactly similar, and the ratio of depth will increase with the decrease of the diaphragm. In view lenses depth of focus can almost always be obtained by the use of diaphragms, and this is also true in an objective specially made for portraiture, but in these the same is obtained by placing two systems further apart or varying the distance of the individual lenses, which means nothing more or less than the production of spherical aberration.

The extent of flatness of field and distortion in lenses are variable qualities, and although depending to a certain extent on the diameter of lenses, to a greater or less degree in one or the other lens, according to the amount of skill and care of the optician.

The tendency almost since the first use of lenses has been the increase of speed, and consequent increase of aperture of lenses, and although the advance has been and is slow to the uninitiated, it means an enormous amount of work to the optician.

Every degree of increase represents a considerable outlay of material and manual labor, and can only be maintained by correspondingly greater attention to the minutæ of work. Each individual reproduction is to him a source of pride, and he works with love and ardor over every step of his work. Outside of this, however, he is fully aware of the detrimental influence of imperfect work, and his ambition is not only to accomplish the highest results, but to maintain it after it has been reached.

The actual work of grinding and polishing is comparatively trifling, as is shown in the cheaper form of lenses, where the cost of the glass is just as high, or wherein the lenses are used whether good or bad, unless they have faults easily noticed. The time-consuming and worrying work is that of continually testing and correcting the lenses.

When we remember that the best, although none too good, involves the amount of work I have endeavored to portray, you will, no doubt, feel that the optician does not ask too much remuneration for it.

Now, as to homogeneity of glass. A disk should be of the same consistency throughout; when it is not, it possesses either impurities or air-bubbles, which are usually easily seen, or so-called striæ, which are not so discernible, but of greater importance. These are caused by the unequal consistency of the glass, or unequal annealing, and have a similar appearance to a glass of water when strong sugar is poured into it and is not well mixed, or heated air as it arises from a stove or hot ground. All glass not specially made for optical purposes has them, even the best plate, as can be easily seen by looking through it endwise. Of course, no disk is used which shows them or air-bubbles or impurities on a preliminary examination; they often appear before the lenses are completed, and work then ceases, but very often they cannot be detected until the lenses are finished. Air-bubbles can easily be seen by any person, and when they exist the optician must judge whether they are sufficient to impair the salability of the lens.

If, however, a man who has a reputation to guard permits it to pass—I would add that it is as hurtful to his eye as to any person's—then the purchaser should not be hasty to condemn it, for it then usually possesses merits which far outweigh this disadvantage. Take, for instance, an air-bubble as large as a pin's head in an ordinary size lens. Its area is so infinitesimally small, as compared with the area of the lens, that it is of no account whatever, and does not affect the lens in the least. Although it may sound strange, I would for my part select a lens containing an air-bubble in preference to one without it, providing it was from some reliable firm.

Striæ, however, which it is difficult to detect, are positively injurious when existing to any extent, inasmuch as they refract the rays passing through them in different directions, thus preventing them from combining to form an image, and they may sometimes cause a false light. They often pervade an entire lens and occasionally can be seen with the naked eye, but, as a rule, not. An easy method of looking for the most glaring is as follows: Unscrew the system and examine each separately. Place one in the camera, or on the table in an upright position, and any distance back of it a lamp or gas jet. Look for the focal point, by means of a white paper, and get the eye in the same position, which can be easily done after a little practice. The lens will be found brilliantly illuminated, and the striæ will stand out as dark shadows. When a few small knife-edge threads show, they are of little moment; but when, in a circle of light, there is a wavy appearance, it is generally indicative of other striæ which are injurious, but cannot be determined in this manner.

I have shown how some of the faults may be determined by almost any person, but others, such as definition, distortion, amount of speed, can only be judged by a comparative test or by a person of wide experience. Comparing a lens with one of known excellence is the only reliable manner, but then the following points, among which I recapitulate those already mentioned, should be observed. Determine coincidence of visual and chemical foci; determine coincidence of ground-glass and plate in plate holder. Use flat plates when ground-glass is flat; if this is not flat use plates corresponding with it. Determine spherical correction by means of diaphragms.

The two lenses should be for the same size plate, and of about the same aperture and focus. Lenses should always be tested, first with full aperture of large stops of the same size, as small stops correct spherical aberration in good lenses as well as in poor ones. If desired they can be done with small stops later on. Make comparisons under the same conditions of light.

For spherical aberration, focus on printed matter fastened to a screen, or on a map, and have the lens square with the object and within two or three times the equivalent focus of the lenses, as they are then under the most strained conditions.

For depth of focus, also, stationary objects which have thickness, or a view. Always focus the lens on the same point, and never

make a comparison without the use of a magnifier, or focussing glass, for focussing as well as for examining the negative. Last, but most important, make the comparison in the spirit of arriving at the truth, and do not permit your judgment to be biased or influenced by your feelings.

A WESTERN WOMAN'S SCHEME.

How She Discovered and Worked a Way to Make Money.

Cleveland, Ohio, has always been noted, if her citizens are truthful, for the most talented and sensible women in that State. There must be some truth in that assertion, for here is one of them, whose story is told in that breezy town.

An ingenious girl has hit upon an ingenious method of self-support. Some time ago she was bitten by the amateur photographic mania, and became an adept at catching picturesque views. With one of those clever little detective cameras she amused herself whenever her fancy led her about the city, picking up here an old apple-woman, with skirts fluttering and cape-bonnet blown back by an unkindly breeze, there a ragged news-girl with her bundle of papers, yonder a group of babies tumbling on the grass in the park, and somewhere else an Italian woman with huge bag of stale crusts balanced on her head, full of artistic possibilities. The girl had something of an artist's temperament, and, though she could neither paint nor draw, she had an eye for the essential features of a picture, and for what would or would not compose well. Many of her photographs were really pictures, and, being caught instantaneously, preserved all the spirit and action and freshness of life. An artist friend saw them one day, and to her surprise offered to buy half a dozen of the best for suggestions for studio work. Two or three days' dwelling upon the idea thus given her bore fruit. She was in want of money, and resolved to turn what had been play into work. She and her camera are out every sunny morning from ten o'clock until three nowadays, and an hour in the "dark-room" of an evening brings out some of the characteristic scenes of city life transferred to her negatives and ready to be transformed into cash.

Her work has quite a vogue among the studios, and clever suggestions are often taken from it. She finds her best market for figure pieces, an attitude, a smile, an expression often serving as a revelation of some queer phase of humanity, and supplying the missing somewhat that somebody wanted to incorporate into a picture. Sometimes an artist gives her a commission, naming the subject he is at work upon and asking her to bring in all the hints upon it that she can find.

NOTES FROM LONDON.

BY T. C. HEPWORTH, F.C.S.

There is but one main subject of conversation here, namely, the weather. We have had no spring and no summer, and in exchange for these, cold winds and constant rain intensified with thunder-storms and snow. Snow in July! The apparatus manufacturers are complaining that little business is being done. The dry-plate makers are making in vain, and the drapers are selling off their summer stocks at ruinous prices. Then

> Hey ho the wind and the rain,
> For the rain it raineth every day.

For this is the song of this most unseasonable season. If amateur photographers would agree to give the value of the plates which they have not been able to expose to the various metropolitan charities, we should be relieved of poor rates for a year or two. But let me hope that next week will see a change for the better, for that week has been chosen for the meeting of Photographic Convention at Birmingham; and I, for one of many, do not wish to wander through the various tempting excursions which have been planned for the members in a state of ten per cent. solution, and consequent depression. Neither do I want to wear an overcoat and a comforter, nor do I care for the embrace of a July snow-drift. I feel that all these inconveniences are not only possible, but probable, in view of the outrageous weather which we have already experienced. It would be a sad disappoint-

ment for all, because the programme of the Convention is a most promising one. As we learned the art of photographic conventioning from our cousins across the water, details of this programme may not be uninteresting to your readers, especially as travelled Americans know far more about the places to be visited than does the average Englishman, who prefers to run abroad for a holiday rather than seek out the beauties and places of historical note of his own land. Here is the bill of fare:

Monday, July 23. Opening ceremony and conversazione.

Tuesday, July 24. Arley and Bewdley-on-Severn; Stratford *via.* Wixford; Stratford *via.* Salford; Oxford.

Wednesday, July 25. Coventry, Stoneleigh, Kenilworth; Coventry, Warwick, and Guy's Cliff; Worcester and Malvern.

Thursday, July 26. Aston, Sutton, and Lichfield; Lichfield and Sutton; Stratford-on-Avon and Charlecote; Coleshill and Maxstoke.

Friday, July 27. Shrewsbury and Haughmond Abbey; Dudley and Wren's Nest; Worcester and Tewkesbury.

Saturday, July 28. All go home.

The Camera Club here in London is doing good work, for it numbers amongst its members many energetic men. The discussion raised there relative to the rules and regulations which should govern photographic exhibitions, and the opinions which have been asked for and obtained from persons interested all over the country, are here to be productive of much good. When the various opinions have been tabulated, and boiled down, as it were, we shall have valuable data to refer to in organizing and managing our picture shows. I, myself, have had the management of more than one exhibition, and I know how difficult it is to please everybody. To begin with, every exhibitor wants to be "well hung," and when they have attacked me with their complaints of being "skied," "left out in the cold," etc., I have inwardly thought that the process of hanging was one devoutly to be wished. Speaking of *inward* thoughts, I call to mind how an exhibitor, who could not find his picture, one day rushed at me with dishevelled hair and roared out, "*Where's my interior, sir?*" Another one took me by surprise in a more artful way. He buttonholed me and hauled me up to a certain picture representing some very fine fir trees. He pointed out that they were somewhat remarkable, and deplored the fact that no intimation of their whereabouts appeared either on the frame or in the catalogue. "Now where are those trees situated?" said he. I thought I would make a shot at it, and answered: Well, I believe that they are at Dorking, in Surrey. "Nothing of the kind," said he, sharply. "They are in Canada. *I took 'em myself.*" I must confess that I felt much mortified, but pleaded that the trees were very like those at Dorking. But I might as well have said that they were very like a whale; for nothing would appease my Canadian friend, who went off in a huff.

I, therefore, feel for those who have much to do with exhibitions, for their lot is not altogether a happy one; and if the Camera Club can in any way ameliorate it, they will deserve the thanks of all. The Camera Club are, too, raising the question of our customs authorities spoiling dry plates by examining them in white light, and are doing their best to get a cure for the evil. There must be many members of Parliament who are amateur photographers, and through their influence the difficulty can surely be obviated.

THE CAMERA.

"No, I do not think that amateur photography is supplanting outdoor sketching," said a well-known Fulton Street dealer in artists' materials a few days since, in response to a question of a reporter for the New York *Mail and Express.*

"While I do not say that the converse of that proposition is true, I do know for a fact that a larger number of sketching classes have gone into the country this summer than ever before, and as a rule these classes have had a very large membership. It is a theory of mine, which I think can be readily demonstrated, that there is really no reason why the sketch artist and the amateur photographer should not work in perfect har-

mony, and that the union will be greatly to the benefit of both.

"I can give you an instance," he went on, "where the camera has been of untold service to one of the artists on a well-known magazine. Formerly this artist, of more than local renown, used to sketch wholly from nature, but now, when making a tour through England, Scotland, or where he may chance to be, he always carries his camera along, and when he comes across a pretty bit of landscape, a ruined castle or anything else he wishes to preserve, he at once takes a negative. Thus, you see, that in a few weeks' time he can take hundreds of negatives, while months would be consumed on his tour if he were compelled to sketch each view himself. When he reaches home he throws the negatives on a piece of cardboard, touches them up with India ink, then in some way decomposes the silver on the plate, leaving the India-ink drawing in its place. The drawing is then photo-engraved, and is published in the magazine as a bona-fide sketch, while, in fact, it is purely a piece of mechanical work.

"To my mind, however, that does not detract from the beauty of the work, and it goes to show what I said in the beginning, that amateur photography, instead of being an enemy of the artist, is actually his best friend, notably in the instance I have cited where Mr. ——— is enabled to add from $5000 to $10,000 per year to his income."

[*Translated for The Philadelphia Photographer.*]

PROCESS FOR PRINTING DIRECT POSITIVE PRINTS ON PAPER SENSITIZED WITH THE CHLORO-ARGENTIC EMULSION OF MESSRS. BLAIN BROS., OF VALENCE (Drôme).*

BY LEON VIDAL.

Here are the principal advantages of the novel mode of printing recommended by Messrs. Blain Bros.

1. The prints made with our collodion paper, they say, are permanent, and may be called unalterable. Prints exposed to the sun, in our show-cases, for several years, have preserved all their freshness, strength, and delicacy of the image, whilst albumen prints were changed and faded after an exposure of three months.

2. Our collodion paper prints more rapidly, and gives exactly, without any grain, all the fine details and delicate half-tones of the cliché; for this reason, soft and harmonious clichés are better adapted than those that are hard and dry.

3. Any photographer printing on albumenized paper can adopt this mode without making any change in his working material.

Manner of Using.

Printing.—Cut the paper with scissors, avoiding contact with the fingers. The cliché should be varnished and very dry, so as to prevent spots when in contact with the paper. Print in the pressure frame, as for albumenized paper (not too strongly); the prints lose but little in the baths. Wash the prints in three waters, then allow them to remain in piles to drain for one hour at the bottom of the dish. This has for its object to preserve their flat surface during the operation of toning. Replace the water in the dish, in order to more easily take up the prints, and tone them in the accustomed bath; or, still better, in the following one, adopted in our workroom. This toning pleases us especially by the freshness of the whites.

Toning.—

A.—Ordinary Water . .	2 litres.
Hyposulphite of Soda .	3 grammes.
Sulpho-cyanide of Ammonium	110 "
Carbonate of Soda (ordinary)	8 "
B.—Ordinary Water . .	2 litres.
Chloride of Gold . .	5 grammes.
Chalk in Powder . .	5 "

In using this bath for the first time, it is necessary to add an equal volume of water,

* In this issue of our magazine, we present a print upon Dr. Liesegang's original aristotype paper. This paper is by no means new, but Dr. Liesegang is doing much towards re-popularizing it again. In the face of all this, the annexed article will be found serviceable.—Ed. P. P.

that is to say, to take one litre of the solution A, pouring into it gradually (continually stirring the mixture) one litre of the solution B, and adding two litres of water. What remains of the solutions A and B may be utilized to strengthen daily the bath which is in use. As soon as the prints are plunged into the bath they acquire a rusty-yellow tone, then change to a purple-brown tone; they should be removed a long time before the violet tone is reached and placed directly, without any washing, in the fixing bath, composed as follows:

Fixing.—

Water	10 litres.
Hyposulphite of Soda .	800 grammes.

That is to say, the strength of from eight to ten per cent. should not be exceeded.

Washing.—Three hours of washing in water, frequently renewed, are sufficient.

Mounting.—Trim and mount the prints whilst they are still damp, in the usual manner.

Retouching.—For retouching prints that are to be burnished with the aid of heat, dilute the color ordinarily used with albumen obtained with the whipped white of an egg; by this means the heat of the press coagulates the albumen and prevents running.

Burnishing.—Burnishing with the aid of heat gives a beautiful and durable brilliancy, doing away with the gelatinizing so unstable in its character.

Mounting the prints is facilitated if they are allowed to soak in piles, after the last printing, in a bath composed as follows:

Wat	1 litre.
Glycerine	200 grammes.

To assist those photographers who wish to make a constant use of their papers, Messrs. Blain advise them to do their own coating, a very easy operation, especially if their stretching frame be used. In order to do this, non-sensitized paper and the emulsions are sold separately, thus enabling the operator to prepare daily the paper according to his wants. After constant use in their own workroom they have ascertained that better results are obtained with papers freshly prepared.

Mode of Coating the Paper.

Place the sheet of paper on one of our stretching frames (as you would a drawing in a stirator), mix an equal volume of the chloric-collodion with the argentic collodion, keeping this last in motion; add the chloric collodion by small fractions (in a room that is rather dark); the mixture becomes milky. Agitate strongly and allow to rest. Fill a lipped glass holding about 300 c.c., pour this emulsion slowly on the upper right-hand corner of the stretching frame, coat uniformly the surface by a slow movement, and collect the excess in the same glass. This last operation should not be done too quickly, in order that the film should have sufficient thickness; the striæ should be cut as was done in the case of collodion plates. The paper thus prepared should be removed from the stretching frame before it becomes dry, and suspended by two American clamps in a heated room, to hasten the drying. A paper dried in a hot room prints more quickly and gives a better result than one dried at the ordinary temperature. The paper should be dry in about fifteen to twenty minutes.

To prevent air bubbles, which would show white spots on the image, do not have the stove in the same room in which the paper is coated. We have found that this little trouble can be completely prevented by preparing the paper in a basement or cellar. Continue the preparation by continually adding some new emulsion to that in use. Keep a glass plate over the lipped glass, to prevent the emulsion thickening from evaporation. The paper being dry, cut the margins with scissors, put in a box, and keep in a very dry place.

For papers which cannot be used and toned the same day, we advise placing them in one of our tin tubes having a double bottom, one of which is lined with asbestos saturated with chloride of lime. Keep the rubber band over the joint to prevent the humidity of the atmosphere from penetrating into the box. In this manner the paper preserves its good qualities for several weeks. Our collodion emulsion is sold in two solutions. One called chloric collodion and the other argentic collodion. These separate solutions will keep indefinitely.

Mixing the Two Solutions.—Always make the mixture by using equal volumes, add the chloric collodion, by small fractions, to the argentic collodion; agitate thoroughly to obtain an intimate mixture, keep this milky emulsion away from the light, and do not prepare more than will last from twenty to twenty-five days. Prepare the paper in a place that is cool, rather than dry.

Preparation of the Paper.

To stretch easily the paper on the stretching frame, open the frame, place it on a table (*introduce in the meantime a small planchet to avoid the sinking of the paper*), place the sheet, face downward, on the relief portion, close the frame, pass the blender over the sheet, hang up the frame, if of the dimensions of 50 x 60 centimetres, and coat as we have already explained. In order to avoid a too rapid thickening of the emulsion, it is necessary, if several sheets are prepared, to collect the greater portion of it in the glass in use, and the remainder in another vessel whose contents are to be poured back into the stock bottle at the end of the work. After the preparation of each sheet, carefully wipe with a cloth that portion of the frame where the emulsion has run out. To avoid staining the fingers in preparing the paper, we advise wearing a pair of gloves kept for the purpose.

Toning.—If the toning bath in use becomes turbid, filter over paper, after having added and well stirred a hundred grammes of ivory-black for eight or ten quarts of the bath. *A turbid bath deposits on the prints a disagreeable yellowish tint which is difficult to remove.*

Washing.—To avoid breaking, we have adopted the following method in our workroom: We wash the prints in a wooden trough, a cane tray prevents the prints from touching the bottom of the tub, the water runs off by an overflow, and a small leaden pipe, performing the function of an intermittent siphon, renews the water at the bottom of the tub, and prevents the hyposulphite from settling there.

Metallization, or Bronzing.

In the case of prints metallized, owing to the cliché being too hard, it is easy to remove these metallizations after burnishing with the aid of heat, by rubbing them strongly with a piece of flannel impregnated with mineral cerotine. Should the cerotine be too hard, dilute it with a little ether and a little benzine.

Varnishing.—Prints of large size may be varnished with greatly diluted benzine varnishes, which cover the retouchings and enable these prints to be framed without glass. The use of chloro-argentic collodion may serve for making direct prints on opal glass instead of impressions on paper transferable to glass, or to any other rigid support, provided this sensitized pellicle is laid upon gummed paper. It is possible in this manner to make stereo-prints on glass and transparencies.

The process of the Messrs. Blain yields prints of very great sharpness. It is necessary, however, on account of the tendency of sensitized paper to curl up, to neglect none of the precautions which they indicate. There is no doubt that when well familiar with the manipulations it will be possible to work with chloro-argentic paper quite as easily as with albumenized paper, and obtain, an important consideration, results much more complete. It is possible, without toning with gold, to obtain very warm tones, highly artistic, by the simple fixing in the hyposulphite soda bath.—*Moniteur.*

OUR PICTURE.

We present as our embellishment this issue a picture that is somewhat of a novelty to our younger readers. Some twenty years ago or more Dr. E. Liesegang, of Dusseldorf, Germany, and a number of others of our German friends, were very active in pushing collodio-chloride paper, a paper coated with a sensitive emulsion of collodio-silver and chloride.

Some very beautiful results were obtained upon this paper, but they were found to be fugitive, and the paper difficult to work. Dr. Liesegang, however, has never lost his faith in it, and for several years has been pushing it again under the name of "Aristotype paper."

He has had several partial imitators in this country—that is, paper has been offered

for sale with the emulsion in bottles and instructions for coating. We learn that this scheme was largely a failure. Some time ago, in order to convince his American friends what the paper would do, Dr. Liesegang sent us enough of the paper to print for an edition of our journal, with what results our readers can see by referring to the embellishment of our current number. Doubtless it will lead to experiment in this direction, and therefore we add below the formula for working the paper which was supplied by Dr. Liesegang, and which was followed in the production of the pictures by Messrs. Roberts & Fellows, the printers for the PHILADELPHIA PHOTOGRAPHER, No. 1125 Chestnut Street, Philadelphia, Pa.

It prints quicker than albumen paper, renders all the fine details of the negative, and gives brilliant prints even from thin negatives. Its surface can afterwards be rendered matt or brilliant, according to the mode of drying adopted.

The washing. In washing, the prints must be placed face downward, one by one. The water must be changed five or six times until there is no appearance of milkiness. The first washing may be continued from three to five minutes. Never wash in a strong light.

The alum bath. The prints having been thoroughly washed, they are placed in a solution of 1 part of alum in 20 parts of water. After two minutes they are rinsed in water.

The gold bath. Any good gold bath may be used for toning, provided it be not too strong.

The bath with acetate of soda is preferred by many. Tungstate of soda gives very agreeable warm tones; phosphate of soda is much used for views.

Here is the formula for the sulphocyanide bath:

A.

Water	3 ounces.
Chloride of Gold	2 grains.

B.

Water	3 ounces.
Sulphocyanide of Ammonium	30 grains.
Hyposulphite of Soda	1 grain.

Mixed together by one part of A being poured into an equal part of B; in no case the reverse; dilute with water.

The toning. If the margin of the print tones quicker than the centre, the gold bath is too strong and must be thinned down with water. By using the alum bath before the toning, the action even of a strong gold bath will be quite equal; but it is certainly better to tone slowly, because a strong bath is likely to make the tone of the print slaty, whereby it looses its brilliancy, while by slow toning a vigorous nice tone will be obtained, ranging from the richest chestnut-brown to velvety black. Some operators tone not more than two prints at once; it is not good to have too many prints in the bath, because it is necessary to have them under good control, that they may not be overtoned, which is never good.

The fixing bath.

Hyposulphite of Soda	3 ounces.
Water	10 ounces.

should be kept as far apart as possible from the other baths, and the prints taken from the toning-bath with the right hand, delivered into the left, and with the left hand placed in the fixing bath.

From five to ten minutes is generally sufficient, but by holding the prints up to the light, it can easily be seen if they are thoroughly fixed. A mottled, dirty yellow appearance indicates insufficient fixing.

Washing. The prints must now be washed in the most thorough manner for about two hours, although the time is of secondary importance to the perfectness of the changes. Having been thoroughly washed, they are taken out and dried, by laying across a long pole or similar arrangement, but on no account placed between blotting-paper.

Toning and fixing in one bath. The operation of toning and fixing is much simplified by using the combined bath.

The print coming out of the printing frame is left in the bath till the color is arrived at, then washed and dried.

The bath is composed of two solutions, and will keep for a long time.

Dissolve:

Water	24 ounces.
Hyposulphite of Soda	6 "
Sulphocyanide of Ammonium	1 ounce.
Acetate of Soda	1½ "
Saturated Solution of Alum	10 ounces.

Fill the bottle containing this solution with scraps of sensitized paper, bad prints that are not fixed, and leave it for a day. Then filter and add the following solution:

Water	6 ounces.
Chloride of Gold . . .	15 grains.
Chloride of Ammonium . .	30 "

It is necessary to print deep enough, and to leave the prints in the bath till, in looking through them, the desired color—dark brown or bluish—is observed.

WORLD'S PHOTOGRAPHY FOCUSSED.

Mr. Tondeur has invented an apparatus consisting of a long box with a door at each end; on the lower door there is a spring similar to that on a pressure frame. The negative, with a sensitized plate over it, is placed in the box, and the door shut; the spring pushes the sensitized plate against the negative; the upper door is opened and the light passing through the box, says Mr. Tondeur, takes the direction of a straight line, and in this manner it is possible to obtain positives by contact far superior to those obtained in the ordinary way.—*Moniteur.*

Magnesium Light.—M. Gædicke continues his experiments with the different magnesium compounds. He has found that the mixtures containing a salt rich in oxygen gave the maximum effect; the use of gun-cotton with magnesium powder alone gave an inferior result, besides a considerable part of the magnesium powder is projected without being consumed; hence loss of light.—*Moniteur.*

Paris Universal Exhibition of 1889.—The Committee of Installation for Photography is composed as follows: Messrs. Davanne, President; Levy, Vice-President; Leon Vidal, Recording Secretary; Andra, Secretary; Balagny, Guilleminot, Fribourg, Darlot, Braun, de Saint-Sennock, Calson, and Gilles, senior. The first meeting was held on Thursday, the 14th of June.—*Moniteur.*

Photography in the Coal Mine.—At the London Photographic Society, Mr. Sopwitk exhibited some lantern slides representing the interior of a coal mine. These prints were obtained with the aid of the magnesium light. The wires were placed for this purpose in different spots, and lighted at the same time. Mr. Spiller remarked that in reproducing excavations in chalk beds, he burnt the magnesium in closed vessels filled with oxygen. Without this precaution the smoke of the oxide of magnesium, spreading through the air, would have prevented exposing a second plate for a considerable length of time.

Mr. Wilkinson showed a hand turbine of his invention, to be used in coating the metal plates with albumen or gelatine in the zinc transfer process.

Mr. England showed some photo-lithographs, reproductions of etchings, and the negatives he made use of. He remarked that in making use of gelatino-chloride plates, he found no difficulty in obtaining the desired density; development taking place in the ordinary way.

Mr. Whiting placed before the members an instantaneous drop shutter, in the form of a rolling curtain. In his opinion, as in that of many of the members present, this is the form of drop shutter to be preferred. The motion is absolutely continuous and no jar can take place except when the plate is completely protected from the light.—Dr. Phipson.

An Interesting Instantaneous Print.—An amateur photographer, Mr. Stettinius, living at Cincinnati, O., U. S., has sent to one of our societies some instantaneous prints which have attracted much attention. One of them, especially, which has had the most success, represents a swimmer about to plunge into the water. The figure has a dimension of two inches and a half. At the moment of impressing the plate, he is entirely suspended in the air, his head and hands in front and the legs pointing to the sky. The success in obtaining this print is considered as an extraordinary photographic feat.—Dr. Phipson.

Hydroquinon Developer.—This developer has been adopted by some of the first portratists of Dusseldorf and Cologne,

who say that it gives them very brilliant cliches, resembling those obtained with wet collodion.—*Moniteur*.

THE project of a Photographic Congress, of which the Belgian Association of Photography had taken the initiative, has been decidedly abandoned, but two societies, the Geneva Photographic Society and the French Photographic Society, having shown any disposition to participate in the undertaking.

AT the June meeting of the French Photographic Society, Mr. Davanne showed a very fine collection of photographic prints made by Mr. Asser, of Amsterdam. He describes briefly the process, which is as follows:

A sheet of unsized paper is smeared over with starch paste, and floated on the back, on a solution of bichromate of potash; when dry the paper is exposed to light under a negative, and washed; the portion of the bichromatized starch which has not been acted upon by the light, being soluble, naturally dissolves. The print is, therefore, formed of insoluble starch and impervious. After inking with a fatty-ink roller, the image is mounted and may then be transferred to stone or zinc—*Moniteur*.

THE ISOCHROMATIC PROCESS OF DR. VOGEL.—Dr. H. Vogel, of Berlin, has addressed a letter to the London Photographic Society in which he rectifies certain passages concerning him which had appeared in the journal of the Society. He asserts again that his plates of eosine-silver (isochromatic) may be used without the intervention of a yellow screen, and also that these plates retain their isochromatic qualities during at least eight months.

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

CAN AID BE GIVEN?

BY THOS. PRAY, JR.

PEOPLE who will not help themselves, are among the worst subjects to extend aid to physically or mentally; and the possibility becomes all the more remote, when people attempt, partially to follow one, and partially, if imperfectly, to go on the road pointed out by another.

The study of optics has been one of the most fascinating, as well as difficult, subjects for about four hundred years, in general terms, and in some cases has been followed by the son as successor to the father through two, three, or four generations in one especial branch—as photographic lenses—pages of the problems presented, as well difficulties surmounted, have been written and printed for the benefit of those who will read, and some people who are interested have read and reread, experimented, and fully satisfied themselves as to the truth of such recorded matter; but how can a close reader put on record a concise or even an approximate collation of such a subject in plainer terms than has been done, and expect it to be of general interest and availability unless it is carefully read and considered.

No person can convey all the ins and outs of his or her experience in any branch of science, mechanics, chemistry, or otherwise, unless the condensation takes a practical form, and for such a writer to attempt to explain away all the inconsistencies of the statements of parties interested in the sale of any line of goods, supplies, etc., would be to attempt the radically impossible; while if a writer were to discuss, in their entirety, inaccuracies of exposure and development, and the qualifying of both these important factors by the lens, and then add the possible modifications to be wrought by the use of different plates, the next twelve numbers of the PHILADELPHIA PHOTOGRAPHER would only open the subject, to the utter exclusion of all other topics.

In using any medicine, it is either indicated or contra-indicated, the reasons for which are apparent to the physician, but would be unintelligible to others, and if he had to stop to go over the whole story, and make other people understand the why and wherefore, his visits would be very few in number, and somebody very likely to suffer. So in photography. One plate requires one treatment, another a different one in development. Take Cramer's honest plates—a

moderate amount of pyro and small amount of soda. Carbutt uses more of both, especially soda, while Stanley comes in with more pyro and between Cramer and Carbutt in alkali. Now it would be folly to use the Carbutt developer on Cramer plates, for in that case Carbutt's would, if correctly and intelligently used, give fine negatives, and the Cramer be pronounced poor. Now reverse the process, and Cramer's would be fine and Carbutt's plates bad, because Cramer's developer does not suit, and both the plates are good if used as intended, and both the plates are poor (in results) if used in some way foreign to the one advised by the maker; not from any fault of the plates but from the manipulator's ignorance, or desire to follow some "conflict of advice."

Take Carbutt's yellow-label plate and develop it so the high-lights can be seen from the glass side, and you have a beautiful negative. Use Stanley in the same way, and you couldn't print from it in four days of blazing sun; then take Cramer's, and it can be made to show pretty plainly, and will print soft and clear, with beautiful modulations. What then shall we follow? The answer is too plain—common sense. Study all the differences that exist and then conform to the requirements of the plates from which the best result is given, never minding whether the developer is "your pet," or the maker's, or some other one, but don't throw a lot of different plates into some developer not suited to them, because you are too shiftless to have more than one on hand, or are not so observant as you should be, and do not make the neceseary modifications in that in order to secure the best results. The fault in such a case lies not in the plate, developer, or in the "conflict of advice," but in personal inaptitude, in not being equal to the occasion, and it is only right and proper that such people are denied the pleasure of success.

Every operator who reads this will say that my statement is fact, solid and true, for the most of us, who have spent any considerable time in the business, can laugh over our own obstinacy, ignorance, and failure, and remember, quite too plainly, that we could readily see the cause of all our trouble by looking in the glass. Yet we all tried to blame some other person or thing, until our own experience had broadened, and given us honesty with which to drop all personal bias and go at facts, and facts are the coldest kind of "crow" to eat.

The lens is not understood, but it has its personality and its influence on the negative, and its influence extends also to the print and the color of the "toned print." Take the Suter lens, and it has a most apparent effect on the negative; then change —same place, time, kind, and speed of plates—and put in Dallmeyer or Ross; the prints show it, tones and color, and to look through the negatives the difference is quite as apparent as are the features of people we meet each day. This fact is known and observed. What is the reason? Or shall we discard either one or the other of the *beautiful lenses* named, because of some conflict of opinion, and take the Beck lens? It has its individuality or effect on plates or negatives. So with the Euryscope and others. These effects are direct results of causes that arise from a difference of practice and opinion in different lens-makers, who do not seek to cause (nor care, as to that) any particular color or shade in the film, but to cause the least refraction, aberration, or confusion in the rays of light, and to accomplish certain other points, and this noticed one is an indirect result. Now in chemistry, which is vastly more far-reaching, the emulsion, its setting, the several chemicals in it, and the lens, amount and quality of light, speed of plate, and chemical behavior, all have to be considered, either from general or specific knowledge of the plates of that make and speed, and the person who uses the chemicals, if he knows chemistry, can say in an authoritative way such a salt or acid is not permissible. He may not write a column of symbols, but his premises are quite as good as the lens-makers', but if reasons are given in brief, let the directions be followed, and if results are correct, let that end it.

Very few photographers understand operative chemistry or applied chemistry, but

they find out how they get good results, and then they have head-level enough to "stick to it."

It is for the investigator to "putter," and get all sorts of results, and when he puts them on record, other people can follow the record or let it alone; every man has that great and glorious privilege.

Chemistry has laws; discussion or dissension does not change them. None of us are over-crowded with knowledge in that department, and the old ones learn every day; but we do know certain things, and the results of many combinations, and among them we know that pyrogallic acid in any solution is unstable if over forty-eight or sixty hours old. We also know that, so far, no known deoxidizing agent is in our hands likely to compete with it; hence we must study its behavior, and make all we can of it. We also know that soda is the most reliable of all alkalies to work with pyro, and that potash comes next. The facts we do know would, if published, make a copy of the size of the PHILADELPHIA PHOTOGRAPHER; what we don't know could be published in about twelve volumes the size and thickness of Webster's Unabridged; so let's stick to our little book, and, if possible, increase its size.

PRACTICAL POINTS FROM THE STUDIO.

TRANSFER OF ARISTOTYPE PRINTS TO GLASS.—A few years ago I recommended making prints on gelatinized paper coated with collodio-chloride, applying it to glass, and dissolving the gelatine with the aid of warm water, which allows the paper to be detached. Recently I have found that commercial aristotype paper may be used in the same way. The toned, fixed, and washed print is applied to opal glass in a dish filled with cool water, care being taken to avoid air-bubbles. The plate with the print is removed from the water, drained, and the squeegee passed over it. After drying, the plate is placed in warm water, and at the expiration of one hour the paper can be detached, and the print remains on the plate.—Dr. LIESEGANG *in the Moniteur.*

THE BEST WAY TO OBTAIN A POSITIVE BY CONTACT.—It consists in placing the negative and the sensitized plate in the frame of the camera to which the maximum time of printing is given; place in the objective a diaphragm of about $\frac{1}{20}$ of the focal distance, and turn it toward the sky or toward a white surface strongly lighted. In this manner an absolutely sharp reproduction is obtained without regard to the plates used being plane. It is possible even, if necessary, to place the negative with the image foremost; the sharpness by this is in no wise diminished. It has been calculated that with a focus of 48 centimetres, a diaphragm of 2 centimetres, the distance of the image from the sensitized film may be 3 millimetres, and this without a deviation greater than $1\frac{1}{2}$ tenths of a millimetre, a quantity so small as to be inappreciable by the eye.—*Photog. Wochenblatt.*

M. GOLTSCH advises coating negatives, which are not faded, with a layer of linseed oil, spread with the aid of a cotton wad, to be afterwards removed with the aid of a similar tuft. If, after the application of the oil, it is necessary to strengthen the negative, the most simple method is to remove the linseed oil with the aid of a little alcohol. This process is also very well adapted to transparencies.—*Revue Photographique.*

REAGENT FOR DEVELOPING.—

No. 1.

Water	400 c. c.
Sulphuric Acid	1 c. c.
Sulphite of Soda	100 grms.
Pyrogallic Acid	25 "
Bromide of Potassium	1 grm.

Make a solution conforming to the order above, and add a sufficient quantity of water to make 500 c. c.

No. 2.

Water	400 c. c.
Carb. Soda, crystallized	50 grms.
Potash	25 "
Sulphite of Soda	25 "

Dissolve, and add a sufficient quantity of water to make 500 c. c.

In using take 10 c. c. of each solution, and 80 c. c. of water.—*Phot. Archiv.*

REAGENT FOR DEVELOPING WITH POTASH—

Potash	50 parts.
Sulphate of Soda . .	100 "
Bichromate of Potash .	2 "
Water	200 "

Mix the salts together, and dissolve the mixture in cold water. We obtain in this manner a rather saturated solution.

In using, take 1½ c. c. of the above solution for 100 c. c. of water, and add from 40 to 60 centigrammes of pyrogallic acid, and the same quantity of bromide of potassium. —*Deutsche Phot. Zeitung.*

DEVELOPING GELATINO-BROMIDE OF SILVER PLATES.—

Water	1 litre.
Carbonate of Soda . .	150 grms.
Sulphite of Soda . .	80 "
Hydroquinon . . .	10 "

Freshly prepared, the bath is too strong, and it should be diluted with one-third of its volume of water; afterwards add each time some of the new solution.

The liquid is not to be filtered, but the clear portion decanted. Should the solution become brown, it must be rejected. The plate is allowed to remain in the bath until the details appear; at that moment, it is to be withdrawn from the bath and kept in a horizontal position until the development is entirely ended.

Wash, and fix with:

Water	1 litre.
Soda	200 grms.
Alum	40 "

The prints obtained with the aid of an old reagent are often covered with a brown veil; they are rendered limpid and clear with

Water	1 litre.
Ferrocyanide of Potassium	10 grms.
Soda	10 "

—*Phot. Archiv.*

TO RESTORE ENTIRELY FADED SILVER PRINTS.—Mr. H. Zandaurek, of Teschen, has obtained from the Vienna Photographic Society a medal for a process for restoring prints made with silver salts that have entirely faded.

Here, according to *Correspondenz*, is the process followed:

Toning Bath—Stock Solutions.

A.—Distilled Water .	5000 c.c.
Tungstate of Soda .	100 grammes.
B.—Distilled Water .	400 c.c.
Carbonate of Lime (chemically pure) .	4 grammes.
Chloride of Lime .	1 gramme.
Chloride of Gold and of Sodium . .	4 grammes.

This last solution is made in a yellow-glass bottle, well shaken, then allowed to repose for twenty-four hours. It is then filtered into another yellow-glass bottle, well stopped.

In using, for each sheet of albumenized paper, take:

Solution A	150 c.c.
" B	4 to 8 c.c.

The prints, well washed, are placed one by one in this bath. Toning should not be too rapid (ten minutes in summer). The bath should not contain an excess of chloride of gold. In this manner is obtained a beautiful light-purple color.

Fixing.

Solution A	150 c.c.
Hyposulphite of Soda . .	15 c.c.

The prints, washed, are placed, one by one, in this bath, and allowed to remain until the yellow color has entirely disappeared. Careful washing terminates the operation.—*Moniteur.*

AT a recent meeting of the French Photographic Society, M. Davanne showed some beautiful prints made with fatty inks by M. Manzi; they consisted of line and half-tone drawings, and were obtained by using copper instead of zinc plates. The results were magnificent. M. Davanne also exhibited some prints made by M. Asser, of Amsterdam, according to the following process: He begins by spreading over a sheet of paper, which has undergone no previous preparation, a coating of starch paste; this sheet is afterward placed, the plain side down, on a solution of bichromate of potash. After exposure under a negative, those portions which have not been acted upon,

being soluble, are removed by washing; the image is inked with a roller, mounted, and finally transferred to stone or zinc.—*Revue Photographique.*

M. Lohse recommends the substitution of sulphate of aluminium for the alum generally used for clearing and hardening gelatine films. This salt is much more soluble than alum, and does not crystallize as easily, whilst it produces the same effects.—*Progrès Photographique.*

Experiments of Mr. Ernest Vogel with the Hydroquinone Developer.—He commences by stating that the price of this substance is considerably lower; the manufacturers, Kahlbaum and Schering, both furnish it in bulk, at thirty marks the kilo, therefore, cheaper than pyro. Mr. Vogel makes use of the following solutions:

Solution 1.

Hydroquinone . . .	1 gramme.
Sulphite of Soda . .	5 grammes.
Distilled Water . .	60 to 80 c.c.

Solution 2.

Carbonate of Soda, crystallized	1 gramme.
Distilled Water . . .	8 c.c.

To develop he mixes three parts solution 1 with one part of solution 2. This developer has the advantage of containing neither alcohol nor caustic alkali, which produces frilling; it does not soil the fingers, and does not become brown by exposure to the air nor by use. One of the great advantages of this developer is to allow considerable latitude in the exposure. The author developed together two negatives of the same landscape, one of which had received an exposure of two seconds, and the other an exposure of eighty seconds. The negative which had had an exposure forty times too long, could still furnish a passable result in the printing. The color of the negatives varies with the exposure; when this is correct, the tone is black; when the exposure has been a little too long, the tone becomes yellowish like that given by pyro, and, when the exposure is much too long, the tone becomes greenish.

M. Vogel says that it is possible to use hydroquinone with great advantage to develop positives on gelatino-bromide paper. By constantly stirring it is possible to operate on several prints at the same time, as the development is rather slow. To tone these prints, he recommends the following bath:

Solution of Acetate of Soda, at 1 per cent. . . .	100 c.c.
Solution of Chloride of Gold and Sodium, a 2 per cent. .	2 c.c.

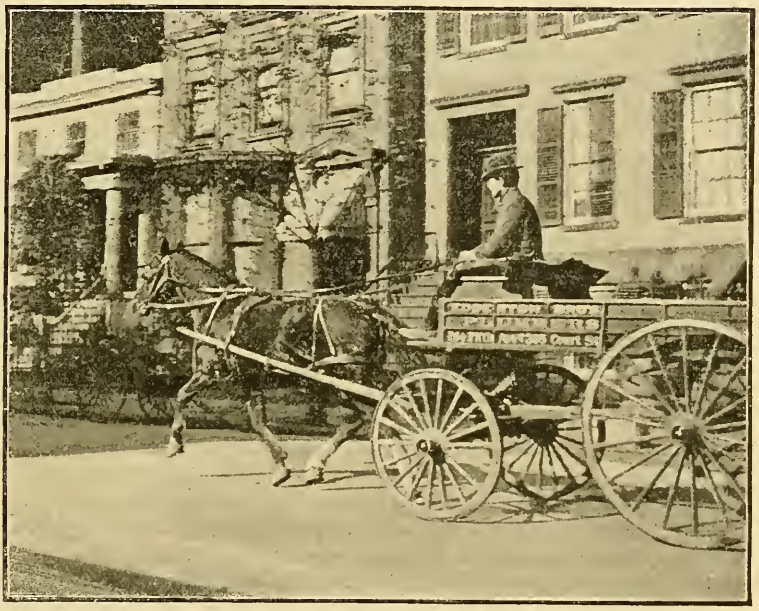
Finally, the author declares that he exclusively uses the hydroquinone developer, which, in his opinion, is universal.—*Moniteur.*

THE HORSE IN MOTION.

BY J. J. HIGGINS, A.M., M.D.

The exquisite Kurtz-type, from the negative I sent you, speaks volumes for the perfection of the process. Of its high rank in photo-mechanical printing I quite agree with you. Nothing is lost, everything is preserved. Its value for illustration is beyond question. In reference to the negative *per se.* It was taken by Mr. Wintringham, an exceedingly able amateur, of Brooklyn, with a Scovill's detective camera and an "Optimus lens," six inches focus, with three-quarters aperture $\frac{F}{8}$, with a spring shutter; distance of object only about thirty feet. Exposure claimed is $\frac{1}{150}$ of a second. In the photographing of near-by moving objects, the matter of distance is a most important factor, every foot almost of approximation adding to the difficulty, and necessitating a more and more rapid exposure. In the case of a horse trotting to a wagon there is no special trouble (although by no means easy) in obtaining outline of form and limbs, spokes of wheels of a satisfactory sharpness. The feat here is the "feet" of the animal, the fetlock-joint causing the hoof to be thrown with, as it were, a convulsive rapidity that is astonishing, and in the negative presenting more an appearance of cabbage-heads than aught else. Mr. Wintringham's success (as shown in the print) is remarkable. The four feet are all and each of them well and sharply cut. The horse was homeward bound, and trot-

ting to get there evidently at a lively gait. Again, although secondary, notice the clear-cut lettering on wagon, as also sharpness of spokes and general outline. To effect this, very great rapidity of shutter was necessitated with consequent diminution of expose, and the original negative was too weak for printing or other use. Mr. Wintringham kindly loaned it to me with permission to intensify it, if by so doing it could be improved. Now, although professionally believing that the services of the physician are ofttimes beyond all price, I do not photographically believe in the doctoring of negatives. No intensified negative is equal to the original. Again, if with a valuable plate you do not succeed, it is lost. Better by far to make a positive, and therefrom obtain a negative to suit; for in so doing you can have your reproduced negative of any desired strength. From such duplication of negative is the Kurtz-type illustration. The proceeding is as has been your custom with your very valuable Oriental negatives. By having a positive stored away, you are at no loss in case of an accident to the original; for from such a positive another and identical negative is readily produced, and not only one but (as at times needed) as many as may be needed. It is, in fact, a method of insurance, the value of which no one can better impress upon the fraternity than my friend, Dr. E. L. Wilson, the editor of the PHILADELPHIA PHOTOGRAPHER.



PHOTOGRAPHY AND ART.*

THE rapid progress made in photography during the past quarter of a century has been something marvellous, and the excellent results produced by the camera to-day have led many to suppose that there was a possibility of its interfering materially with the profession of the painter and draughtsman.

But the contrary is the case. The more perfect the work of the camera becomes, the more perfectly will the public be made to understand nature, and especially the shadows in nature. This will cultivate the public taste so that they will be ready to receive the highest forms of art in the

* Read at Chautauqua on the Photographic Day.

future. Because the less a nation knows about nature, the less capable are they to appreciate art.

At present the camera does not reproduce in its monochrome the colors of objects in exactly the true relation to each other—in what the painter calls their true values. But every day in the art we see less and less of this short-coming. The splendid effects gotten by Mr. Kurtz, of New York City, by his orthochromatic process in photographing paintings so that the colors of the objects in the picture are represented in true relation to each other (that is to say, a blue sky comes out not totally white as used to be the case in old photographs, and yellow objects made light, and not black, as formerly), is indeed encouraging.

The true painter hails with delight these improvements in the art, because every good picture produced, whether by human or mechanical aid, is a new cultivating instrument with the public.

The more the shadows in the human face are looked for by the ordinary person, the better for the arlist, as it is his perfect delight to paint as Rembrandt did, the head half in the mystery of shadow, and not as Queen Elizabeth always ordered her likeness to be made, totally without shadow.

The photographer is generally trusted more fully than the human artist; and when a person sees a photograph which does not look like the original, he is apt to be a little less critical at first than if a painter had made the portrait. The photograph sets him to thinking what it really is which makes the face of his friend or his child. And it is a great thing when people are set to thinking as to what it is which causes the impression which their minds have of certain things.

There were two families in New York who were happy in the possession of a baby —that is to say, each family had its baby, about a year old. For some reason or other, it occurred to both families at about the same time to have photographs taken of their respective infants. Without either knowing it, they went to the same photographer.

In due course of time one of these families received the proofs from the photographer. All crowded around to see them. They were handed about, criticized, one admired, a favorite one selected, which was pronounced "just too sweet for anything," and it was about to be put in an envelope and returned to the photographer, when the nurse asked to see it again, and, looking at it a moment, raised a doubt as to the dress represented on this baby being identical with that worn by their cherub the day of the operation. Sure enough, all now said it was not right. And in a few moments it was discovered that the proofs for the family up the street had been sent instead of the right ones.

This only shows how limited the knowledge really is which some persons have of the human face. Show some one a photograph of some natural scene which they are not very familiar with, and where are no definite landmarks, and how often they are unable to tell you just exactly what spot it represents. They know the general character of the scene, but cannot tell you where is the east or the west. Let photographs show how much there is to observe in a landscape, and it does the artist a great service. Then, again, in making views of vast tracts of land which are not wholly picturesque, not enough so to tempt the great painters, yet which are very interesting to the traveller and scientific student, in giving us correct reproductions of such country it serves us greatly.

In architectural views, in the rendering of shadows as they are on all parts of the building at the same time, photography does much more than the artist when he gives us in a painting, perhaps the morning shadows on one part of the building and the afternoon shadows in another.

In the stereopticon views which photography has enabled lecturers to use, photography has again done us good service, because it makes these lectures much more graphic, as every one knows, and saves a great deal of explanation and describing.

In *photogravure*, photography has permitted us to reproduce paintings at a much less cost than was formerly possible in engraving and etching.

In photographs of monuments, again, photography has almost taken the place of

the draughtsman's work. And while some few artists are thus put out of employment, yet, as this is a much more certain method than free-hand drawing, the artist will not complain, because, on the other hand, it permits scholars to study archæology more thoroughly, and the study of archæology always leads to the consideration, at least, if not the study, of modern art.

In instantaneous photography the camera wonderfully helps the painter in giving the truth as to action, in both man and animal in their rapid movements, which they otherwise could not learn without an infinite amount of trouble and patient observation.

In many other ways the art of photography is not to be feared by the painter or draughtsman. And least of all will be the perfected art of the future when photography will give us a truer relation of colors to one another than it does at present.

ERNEST KNAUFFT.

[*Translated for the Philadelphia Photographer.*]

SOMETHING ABOUT ZINC-ETCHING.

BY H. TRAUT,
of Paris.

ONE of the greatest misfortunes in the photographic etching process is that the zinc plate in the course of the many and lengthy manipulations, warps, and so in putting on the last blackening for the purpose of clear etching, the greatest difficulties are encountered. All possible methods have been tried to remedy this, but without any particular success, and often it becomes necessary to cut a large plate in two, and to destroy every cliche at the last application of color. Notwithstanding it is generally necessary to blacken afterward with the help of tympans, which is not always an easy task.

I shall try to describe my experiments in this respect, and I hope that my esteemed colleagues will be able to overcome this evil according to my method just as easily as I have done. First, I will turn my attention to the manner of warming a large roll. It is customary to warm the plate over an open flame, which necessitates the use of tongs or holders. But it can be noticed that by this means the plate, since it is supported at only one or two points, bends downward from its own weight. Experiments of practical workers prefer, therefore, warming upon a hearth plate. Since a stove in the summer time sends out too much heat, I have arranged a marble plate, correspondlng to the hearth plate, heated by means of gas. This apparatus answers the purpose better, but has, nevertheless, many inconveniences. I find that it is impossible to get a plate heated uniformly; there will always be one or more parts of the zinc that do not lie as close to the plate as the others, and these parts take longer to melt, so that they have scarcely begun to melt when others are scorching. The pressing down of these parts by means of a pointed pencil helps but imperfectly. Therefore I return to the open flame, and experiment as follows:

I make use of a simple open gas-stove, such as is used for cooking purposes. For the purpose of warming I put the plate in a rectangular wooden frame, made as light as possible, the two longer sides of which extend beyond the one short side for two handles. The frame must correspond to the size of the plate (an inside size of 50 x 60 c. m. generally suffices), and covered with a kind of twisted wire with a mesh of at least an inch (such as is used for hen-coops will answer). This twisted wire must be nailed around upon the frame neatly and firmly. The plate which rests upon this wire is not influenced by its own weight or by that of any holder, and thus not being stretched in any way it remains even. One will find after some practice that by regularly moving the plate backward and forward over the flame, the plate will be warmed uniformly. But if, when putting on the color, one part appears to be less warmed than another, then the plate can be held for an instant over the flame just at this part, and the desired warmth be instantly obtained. The plate should remain in the frame till the end, then it is never necessary to disturb the plate with the fingers. Thus the hasty laying away of the plate is avoided, which sometimes occurs in hot weather, and in which in many cases produces curving or bending. A few dexterous movements bring the plate with ease

from the middle of the frame to one side, and then it can be slipped upon the stone without burning the figners. Now, notwithstanding the plate is kept pretty even by this means, yet in putting on the clear etching hardly a perfect level is found. To obtain this I experimented as follows:

I had made a block of hard beech-wood of the same thickness as a lithographic stone. This I lay in place of the stone in the press, neatly wipe off any dirt, and lay the plate, after deep etching is done and the etching ground washed, with its concave side directly upon the wood block. I have previously warmed the plate a little (40°), and neatly scratched off the wrong side. Upon the warm plate I lay a well-greased press board, and draw through the press, using moderate pressure with the flat rubber. In this way I obtain a plate which is exactly as even as it was before the beginning of the etching process. It will be scarcely necessary to use the tympan.

(To be continued.)

Editor's Table.

Mr. S. T. Blessing, New Orleans, is preparing a large catalogue of photographic goods, to be issued about September 15th.

Mr. E. E. Miller, Ashland, Ohio, has favored us with a very beautiful photograph of a night-blooming cereus, made with the magnesium flash-light on the night of July 30th. It was made with Buchanan, Bromley & Co.'s violet flash. Technically it is very perfect, and the exposure has been just right, so that the delicate half-tones of the different parts of the plant are splendidly rendered.

Another Oversight.—We regret to say that, in our review of the exhibits at Minneapolis, we overlooked that of Messrs. W. H. Walmsley & Co., Philadelphia. The display of Beck lenses was the best made at the Exhibition, we believe. Among them was Beck's New Rectilinear Portrait Lenses, with an aperture of *f*-4 and all the advantages of rectilinear lenses, combined with the Iris diaphragm. The beautiful pictures included in the Seed Dry Plate Co.'s exhibit (notably the large-size portrait of Miss Potter, and the Great Bridge by Mr. Ryder, of Cleveland, O.), were all made with the Beck lenses. We have already given our opinion of these excellent photographs, and there can be but one opinion of the excellence of the lenses with which they were made. The Beck lens wins favor wherever it goes.

Buchanan, Bromley & Co. favor us with their August special price-list of photographic supplies. This time it contains fifty pages of closely printed matter, arranged for the vest pocket. It is very convenient, and will prove acceptable to their customers and friends.

Chas. Butterworth, Wilmington, O., recently treated himself to a copy of Burnet's *Essays*. After studying it, he writes to us as follows:

"I want to thank you at once for your valuable book. How any photographer can afford to be without it is a question; certainly, every country photographer who cannot have the advantages of art schools, or frequent access to art museums and galleries, should have a copy for daily reference. It is so simple that 'he who reads can run.' It is practically worth ten times the price, or as much as the cost of the original copy. Health permitting, I hope to meet you at Boston next year."

We have received from Mr. James Pollard, Tilsonburg, Ontario, the gentleman who made "The Banquet" pictures in our last number, another series of charming views, chosen, we presume, by the same methods that were described by him in his letter. They are excellent, technically and artistically. He closes his letter by saying, "*Quarter Century*, I find, is a most excellent work, while *Mosaics* has done much to enlighten my photographic pathway."

J. M. Appleton, of Dayton, Ohio, whose lovely exhibit at Minneapolis attracted the attention and caused the envy of everybody, writes us that he will shortly supply us with a series from his exhibit for illustration of our magazine. Moreover, he informs us that before another convention he expects to be located in the beautiful city of Minneapolis. We wish him much success in his new location—probably

one of the results of the convention—and are glad to add that Mr. Appleton promises some practical remarks to appear when the pictures do.

THE friend of everybody, Mr. GUSTAV CRAMER, of St. Louis, sailed for Europe with his excellent wife on the steamer "Aller," August 15th. We believe he will be happy in the fatherland before this reaches our readers, and everybody will wish him a pleasant tour and safe return. He starts in good spirits, and he is already much improved in heath.

C. M. COOLIDGE, 24 E. 42d Street, New York, issues a catalogue of his photo-caricature foregrounds. They are very comical, and are having a revival. We commend them to those whose patrons will appreciate them.

C. GENTILE, well-known to all the members of the P. A. of A., honored us with a call recently. Mr. Gentile is now pushing a second journal called *Il Messaggiere*, an Italian journal. His headquarters is at Chicago.

H. M. WAIDE, Quincy, Ill., whose negatives were used for Our Picture this month, has just favored us with two very pretty portraits of young misses engaged in a musical performance, we judge; one with hands uplifted, holding her baton, apparently leading a concert; and the other, a tiny miss, with baton in both hands, posed ready for the leading of the gallop. Both are most carefully done, well lighted, well posed, and technically excellent. With them Mr. Waide sends a 14 x 17 picture which he calls "To the Rescue." It represents a member of the life-saving corps, standing upon the shore in his wet-weather costume, in the act of throwing the rescuing rope to a drowning person in the waves beyond; at his feet lies the anchor to which the other end of the rope is attached. The whole picture is well done. The conception is an excellent one—rather ambitious and difficult for the carrying out in a photographic gallery, but great attention has been given to the details, even to the appearance of the rain in the air and upon the water. Certainly, Mr. Waide deserves great credit. The production of one or two pictures like this every year will improve and help any photographer if he be possessed with five parts of ambition and skill.

THE Chautauqua School of Photography is exceeding all expectation this year under the care and able teaching of Prof. CHAS. EHRMANN. On photographic day, August 23d, Prof. Ehrmann delivered an able lecture on the "Modern Practice of Photography," which was listened to in the grand amphitheatre by a large and attentive audience, and scored one more splendid point for the glory of photography. We wish we had room for it in our journal. The *Photographic Times* of August 31st gives it all—a concise review of the history of photography—and then supplies a synopsis of modern photographic work as it is taught at the Chautauqua school by the talented professor. The molecular changes and functions of the different solutions are given in a style chemically and exclusively Dr. Ehrmann's own. We congratulate him on the opportunity he had for glorifying and advancing our splendid art.

OSCAR TRELLON, of New Haven, Conn., has favored us with a number of fine prints; there are from four by five negatives; one of them is of a yacht under full sail; another of a long wood-lined lane, a carriage moving in the rear; a snap-shot of a carriage; and the other, the most wonderful of all, is a view of a small village, with a blacksmith's shop in the foreground, and a horse standing in-doors staring at the camera like a human being. This view was taken from a railway train, is perfectly sharp, and a lovely composition in every way. A view of a little brooklet, singing its way beneath a rustic bridge, also comes from Mr. Trellon.

E. H. HARDY, Tecopura, N. Z., favors us with a number of beautiful pictures taken with the magnesium light. In some respects he has obtained better effects than almost any we have seen. He has kindly sent us his methods, together with drawings of his apparatus, and we shall publish them presently with the cuts. The picture of "Beauty and the Beast," sent by Mr. Hardy, includes eleven figures, and could scarcely be bettered in a studio.

MR. G. GENNERT, 54 East 10th St., New York, has received a new importation of Dr. HENRY BYK'S chemically pure needles of hydrochinon. Nothing is better than this article, manufactured at Berlin, Germany, and it is now sold at the low price of seventy-five cents per ounce. All the dealers have it. Mr. Gennert is the well-known agent of the Eagle Sensitized Paper and the Eagle Albumen Papers, as well as of the Eagle Dry Plates. The latter, we understand, are becoming more and more popular. Changes have been made in the working combinations

used at the laboratory, and important improvements in the preparation have resulted so that everything works well, to the pleasure and profit of many customers, continually increasing, and the old ones as well.

Dry Plates in Montreal.—We learn that considerable dissatisfaction has been expressed by many of the Canadian photographers with the severe duty imposed upon dry plates in order to protect a single manufacturer. A new dry plate factory is about to be started in Montreal by a firm well known to the trade. It may prove that competition is the life of trade; anyway, we trust the photographers will profit by the enterprise.

C. B. Talbot, Tacoma, Washington Territory, writes us of his progress in ziuc-etching. He has made many original experiments in this line, and we look for something presently which will be of benefit to all workers in that direction. He says:

"I make a line or stipple engraving directly from a common negative, made by any of the methods, wet or dry. My experiments show that there is nothing in the way of perfect accomplishment. Any good negative will make a good engraving." He also says, "In addition to the fact that you mention in your excellent book, I find it good to heat the asphaltum ground after the first etching, and it may be done sometimes twice before the operations you name; first time warm enough to make it sticky, and the second time make the plates somewhat hotter. I suppose all persons working in this line have some touches about it peculiar to themselves."

From Mr. Edwin C. Fisher, Claremont, N. H., we have received a number of cabinet portraits of very excellent quality. Mr. Fisher has added a great deal of interest to his collection by giving titles to some of the pictures, and then explaining to us what his conception was and how he carried it out. One of them, called "Where," and another "I Want One," and a third one "Mamma Dess Me," are all very lovely pictures of children. The picture marked No. 1 is an exquisite study of an old gentleman over ninety years of age; No. 3 is of an old-time friend, Mr. E. Busch, the well-known manufacturer of kaleidoscopes. The whole collection is very meritorious.

Mr. Fisher interests us further by describing the way in which he became interested as a practical photographer. He was kept back from it for a long time, but his desire to join the ranks overcame all difficulties, and now for five years he has been pursuing his favorite art.

The Philadelphia *Ledger*, in its camera column, devotes nearly one-fourth of the recent issue to a notice of the *Photographic Instructor*. It says, among other good things: "The new volume, which will be better recognized as the Chautauqua Lessons, is fully up to the high standard of works which have preceded it in Scovill's series. Next to the personal guidance of a competent instructor, which we hold is worth more than any text-book which could be written, we imagine it would be difficult to find a better guide than these lessons. Nothing is taken for granted as to the knowledge or experience of the student, and he is led step by step so gradually and so intelligently that he cannot fail to learn. The fact is, the lessons, which were originally prepared for the Chautauqua students, were written by the most competent men who could be found to treat of the different subjects." After mentioning the authors the writer further says, "To Mr. W. I. Lincoln Adams belongs the credit of the revision and rearrangement of the lessons, and to Prof. Ehrmann for the apendix, which forms a concise handbook of photographic chemistry. In their new and attractive form the lessons go out to occupy a wider field of usefulness. Systematic and observant workers, amateurs having an ambition to master the difficulties of their hobby, and not merely content to skim along the surface for a time, are too apt to be the *exceptions* nowadays, and any educational work whose aim is to make such amateurs the rule rather than the exception should receive a warm welcome.

W. H. Walmsley & Co., have issued a photographic reproduction reduced from their large catalogue. It is very clear and sharp.

Letters on Landscape Photography. By H. P. Robinson, author of *Pictorial Effect in Photography, Picture Making in the Studio,* etc.

This little work of sixty-six pages about the size of *Mosaics* is a reprint of the "Letters on Landscape Photography Addressed to an American Friend," which appeared in the recent numbers of the *Photographic Times*.

We are delighted to have it in this shape, and presume that the American publishers, Scovill Manufacturing Co., will soon have copies for sale. The price in England is only a shilling

and every person who goes out on a photographic tramp can afford to buy a copy and carry it in his pocket for reading on the way. He will be repaid by so doing if he repeats history a dozen times. It is impossible to open the book at any page without catching up some hint that will be useful and helpful, and start photographic lovers to thinking. Let us try one or two pages:

Page 21.—"This faculty of artistic sight, or, indeed, the faculty of seeing anything, only comes with training."

Page 61.—"Success has made you reckless." This is full of thought.

Page 47.—"A very crucial test of a man's artistic power is his selection and arrangement of figures in a landscape."

Thus the whole work goes on with words of wisdom, wonderful, weighty, and winged, and useful as well, every one. The author is too well known to need any praise from us.

The Photographer's Book of Practical Formulæ, compiled by Prof. W. D. Holmes, Ph.D., and E. P. Griswold. Price, in paper, 75 cents, cloth, $1.50; two hundred and forty pages. Published for the author by Perry A. McGeorge, 220 and 222 William Street, New York. For sale by all dealers.

This excellent work, compiled by a learned teacher in photography, and a veteran dealer in photographic supplies, will meet with a ready welcome wherever its merits are understood. It is, as its title indicates, a compilation of the best formulæ from all the well-known sources, together with contributions by the authors themselves, and a series of tables forming an appendix at the end, useful to everybody in photography. Besides all this, it has a copious index. The entire contents of the book seems to have passed through an intellectual filter attended upon with great care, so that really the residue is presented to us in the most concise, condensed, and practical form. If there is one word above another that will include all the merits of the book, it would be the word "practical." It will undoubtedly give help and inspiration to every person who becomes its fortunate possessor.

Photographic Mosaics, 1889, is in process of production. It is the twenty-fifth year of the favorite little annual—favorite with the buyers as well as with the authors. All practical articles for its pages will be welcome. Please let them be short and to the point, and in our hands, if possible, by the middle of September. Operators are especially requested to give of their experiences.

Mr. James Landy and lady, in companionship with a large number of friends, celebrated the twenty-fifth anniversary of their marriage at their home in Walnut Hills, Cincinnati, recently. We send our congratulations.

The Bismarck, Dakota, *Daily Tribune*, of Aug. 14th, has a very appreciative review of Mr. Landy's Hiawatha picture. We have received a copy of the picture ourselves, and are preparing a review of it, which will appear shortly in our magazine. The picture itself will not appear, Mr. Landy preferring this time not to have his prize picture copied.

The Camera *vs.* The Gun.—The *Photographic Times* reproduces a very excellent article with the above title by Mr. Ernest Ingersoll, which appeared recently in the *Christian Union*. We intend making a review of this paper, and we propose, presently, when we have the room, to do more than that. We meanwhile express our approval of it as the right kind of matter for the would-be successful photographer to read.

Sun and Shade.—The first number of our new contemporary, *Sun and Shade*, appeared last month, and proves to be well worth waiting for. Three photo-gravures, three photo-gelatine prints, and seven sheets of other process work, give photographic reproduction most efficient exposition, and at the same time many of them are most satisfactory from the point of view of art. The photogravure from Lerolle's painting "The Knitting Girl," ought to be hung in every studio, as summing up some of the qualities modern photography most needs, feeling, breadth, and simplicity. One of the great French painter's most charming works, the print retains its broad, restful qualities. No crowding of accessories, no look of pose and too-evident composition — just a country girl under the trees—it will repay long study to him who can analyze it, and seek to bring some of its qualities into his work.

Of the portraits of the two presidential candidates, President Cleveland has already written, "It is the best I have ever had;" while that of General Harrison was made from the negative from which he orders photographs for his family and personal friends to be printed. It loses nothing in the photogravure. The sheet of yachting views is very handsome as a whole, as is its companion of electric-light photographs of Mr. Daly's "Midsummer Night's Dream," and both contain some excellent separate "bits." "The Poacher's Death" reproduces well a pen-

and-wash drawing by Hubert Herkomer. A double sheet is made up of scenes from the life and death of the late Emperor of Germany. By way of showing in another manner what the camera can do, plates from instantaneous negatives of a cyclone caught in the act, and of a river-bed blast, are given.

A word should be said in praise of the cover, which is original and striking, while perfectly in taste. We feel assured that there will not be many places in the country where that crimson cover will be entirely unknown. Already it has met a welcome in Dakota, in Texas, and on the Pacific Coast.

The next number (for August) will appear early in September, and thereafter the date of issue will be about the 25th of each month. It will contain photogravure plates from a painting by Hamilton Gibson, of views in the Adirondack lake country, and a portrait of some celebrity; a theatrical picture, "The Minuet," and other interesting matter.

All this splendid pictorial material is sold for thirty cents, or $3.00 a year. We are sure that all of our artistic and art-loving patrons will want it. It should be on all reception-room tables.

The size of the pages is 11 x 14 inches. The energetic editor, Mr. F. H. Wilson, makes a splendid start, and the publishers, The Photogravure Co., 853 Broadway, New York, have stood well by him in their varied and excellent reproductions. Long live *Sun and Shade* to give breadth and health to the art culture of our people.

Photo-engraving, Photo-etching and Photo-lithography, in Line and Half-tone; also Collotype and Heliotype. By W. T. Wilkinson, of London. Revised and enlarged by Edward L. Wilson. American (third) edition. Crown 4to, pp. xvi.—184. (New York: Edward L. Wilson, 1888.)

In this handsomely got-up volume the author has made many additions to his last English edition. Mr. Wilson has added further to the value of the work by "boiling down" and incorporating the best points from current publications in France ond Germany. Chapters and parts from the *Handbuch der Chemigraphie und Photochemigraphie*, by Mr. J. O. Mörch, have also been added, making the work complete up to date.

The volume is divided into six parts, viz., Photo-engraving in Line, in Half-tone, and on Copper; Photo-lithography in Line and in Half-tone; and Collographic Printing.

An Objection Overcome. — Dr. Higgins's Automatic Duplex Finder, of which we have spoken so highly, is before us again, this time with an additional improvement, by which (automatically again) the image is fixed and permanent on the ground-glass in *whatever position* the finder is placed—or movable as previously at the will of the operator. This really Triplex character, imparted to it in a most unique way, makes it the perfection of Finders. To be without one is to be behind the age. It now serves for views either vertical or horizontal.

"The Dictionary of Photography," now being published in the numbers of the London *Amateur Photographer*, written by Mr. E. J. Wall and edited by the *Amateur's* enthusiastic head, Mr. Chas. W. Hastings, is attracting many subscribers to that growing weekly. It will make the *Amateur* many friends in America, where it is already the most popular of the foreign weeklies.

American Bibliography of Photography.—Fifth Article. The Philadelphia Photographer, a monthly journal devoted to photography, $3.00 per annum. Single number, 30 cents. Edward L. Wilson, Editor. Philadelphia: Benerman & Wilson.

Vol. I., No. 1, January, 1864. 8vo. 16 pp.—illustrated.

Vol. I., 1864, 192 pp.

Vol. II., 1865, 208 pp.

Vol. III. was enlarged to 32 pp. for each number, and consists of 390 pp.; the subscription price being raised to $5.00 per year. The illustration in the first number of this volume is of interest to-day, being a magnesium-light picture, a group taken in a parlor, using magnesium ribbon, and, of course, wet collodion plates. The result would be considered very pleasing, even in this day of magnesium cartridges and dry-plates, and is especially free from the chalky high-lights so often seen in the work of to-day.

The subsequent volumes of the Photographer kept on the even tenor of their way until 1886, when the issue was made semi-monthly, thus doubling the size, and the place of publication changed to New York.

The Photographer, as it is commonly called for short, is, therefore, the oldest of American photographic periodicals. Its destinies are still presided over by its genial editor and projector. It has always made a feature of its illustrations, and has steadily maintained its price and its position among the leading journals of the world.—C. W. Canfield, in the *Photo. Times*.

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ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.

FOR SALE. — Gallery in a thriving town of 4000 inhabitants; county seat; everything in fine shape; satisfactory reasons for selling. Address, F. E. SLOCUM,
Lowville, N. Y.

The finest portraits in the quickest time are made with Voigtlander & Son's new "Portrait Euryscope."

WANTED, to correspond with a good retoucher. One that can operate and do crayon work preferred. Permanent situation to the right man. Address, C. S. ROSHON,
142 N. 8th St., Lebanon, Pa.

COPYING camera, 25 x 30, with folding stand, for sale. "The Albertype Co.," 60 Reade St., New York.

Read the best books. Consult our advertisements.

WANTED, at once, a good printer, one who can assist in retouching preferred. A steady situation to the right man. LIEBICH'S,
Cleveland, O.

WANTED, to make up a file, the PHILADELPHIA PHOTOGRAPHER for Dec. 4, 1887. Fifty cents will be paid for the same, or *Mosaics*, 1888. Please try and oblige. EDWARD L. WILSON,
853 Broadway, New York.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

BACK VOLUMES OF PHILADELPHIA PHOTOGRAPHER FOR SALE.—Owing to the recent destruction of my studio by fire, the set being broken, I will sell volumes 2, 3, 4, 9, and 10 complete, volume 8 except number 96, and numbers 78, 121, 122, 123, 171, 182, 190, 261, 257. All in good order. For terms apply to
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The more you read Quarter Century the better it gets. It is like good wine, the older the better; or, as a Kentuckian would say, good whisky. Send the book on Photo-Engraving.

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Photographic enlargements furnished and finished in Crayon, Ink, or Water Colors.

Send for 1888 reduced Crayon price list. Highly finished work at low prices. Will alter pictures after delivery, if returned.

PROFESSOR W. K. BURTON'S BOOK ON PHOTO-MECHANICAL PRINTING PROCESSES continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated, and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.—*Anthony's Bulletin.*

BUY BURNET.

VIOLET LIGHTNING FLASH.—(Brutum Fulmen.) This compound is made by a new formula, and produces the most powerful actinic light yet discovered. It contains neither acid, chlorate of potash, nor animal charcoal. It oxygenizes more rapidly than any flash compound heretofore offered, and may be used on card-board or glass with safety.

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A word or two as to the "Eclipse" Plate: with the "Eclipse" Sen. 27, I have made better work than ever before. One charm is their exceeding brilliancy and great rapidity, giving full detail with Prosch rapid shutter, diaphragm *f* 24. The negative is very like the best class of old wet-plate in its quick printing characteristics. CHAS. WAGER HULL.

NEW YORK, July 9, 1888.

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For general outside work the "Rapid Euryscope," made exclusively by Voigtlander & Son, is positively unrivalled.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY.—From the title of this book a casual reader would suppose that it was the experiences of a photographer for a quarter of a century; but they would be greatly mistaken, as its second title, "A Collection of Hints on Practical Photography, which forms a Complete Text-Book of the Art," explains what it really is. Mr. Edward L. Wilson, the author and compiler, is well known as a thoroughly practical writer on photography, and his *Quarter of a Century* is a valuable addition to the many other books on the subject he has written and edited. It will be an authoritative encyclopædia for many years to come; we have searched for omissions, but find it a very perfect treatise on the art.—*Trübner's American, European and Oriental Literary Record (London, Eng.).*

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The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

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Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed.

Since the demand for photo-engravings from newspapers, magazines, etc., is each day growing greater and more imperative, it behooves those who desire to become skilled in this fascinating process to secure a copy of the new work.—*Lithographer and Printer.*

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I have received your Burnet and prize it very highly, as it is a great assistant in the studio. I consider it invaluable to any Photographer or Artist.

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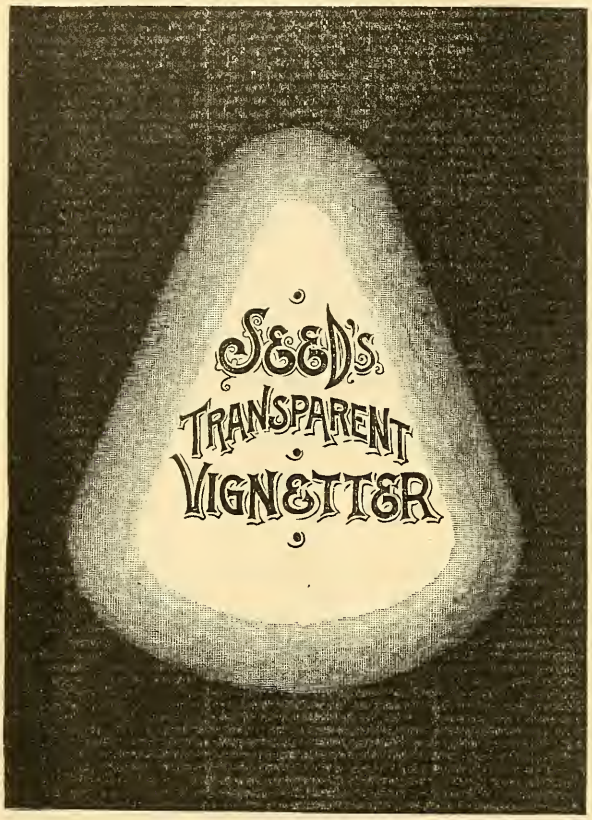
The Platinotype for Amateurs; simple to work, and the results artistic and beautiful. Send ten cents for sample landscape and book of instructions. Willis & Clements,
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As retoucher in a first-class studio. Address, Retoucher, Holyoke, Mass.

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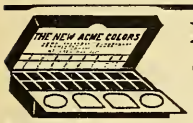
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By a lady, in a good gallery. Understands fully reception-room, printing, retouching, bromide enlargements, and general gallery work. References. Address, Detective, care Anthony & Co., 591 Broadway, New York.

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The late ADAM SALOMON, A Portrait of the Editor.
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and P. H. ROSE, "A Little Rosebud."

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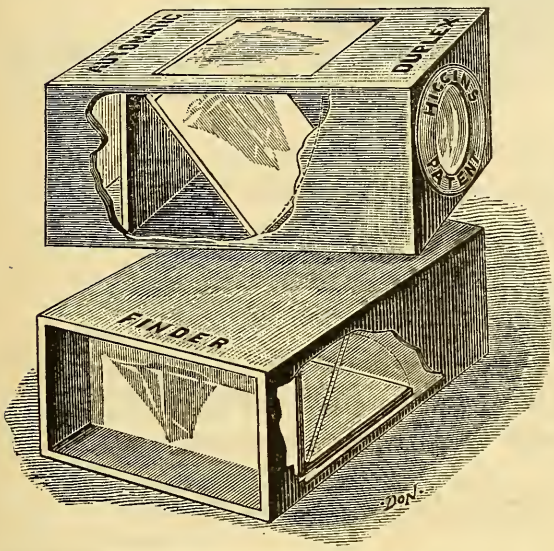
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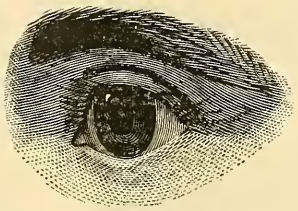
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If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better —DEAN WRIGHT, in the April *Boston Academy*.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text book of the Art. By Edward L. Wilson. Published by the Author. New York, 1887. Price $4. Pp. 528.

In making the above claim that this work is a complete text book of the art of photography, the author has not overstepped the mark, for we have seen nothing to compare with it in clearness and attention to details and manipulations. The author's easy style is already well known to those interested in the subject, and goes a long distance toward making the "Quarter Century" an interesting volume, entirely independent of its large store of information. After an outline history of the subject, the theory of photography is treated of; then follow the subjects of light, the camera and lenses, the diaphragm, artistic principles, indoor and outdoor work, chemicals needed, negative making, printing, photo-engraving, slide making, etc., etc., with a host of details worked in under the proper headings. Isochromatic photography is treated of in a separate chapter, and its special value in certain classes of work noted. The more prominent features of the work are the chapters on lenses, art principles and the making of paper and film negatives. The treatment of this last subject will be found of especial service to the travelling amateur, who is often deterred from adopting the use of flexible negatives simply because he can find little reliable information concerning their peculiarities. We know of several cases of amateur enthusiasts in the art who have tried the "films," and finally returned to the old stand-by glass plates, because of difficulty in handling the later process. By the light of such information as Mr. Wilson has supplied, this difficulty largely disappears, and the process is simplified by giving a detailed understanding of it. The arrangement of the book is exceptional in one respect that greatly increases its value for general work. The main text is supplemented by foot notes in smaller type, comprising quotations from all our leading writers on the subject, and in many cases containing original methods that have not yet become generally known to photographers. This collection Mr. Wilson has been in an excellent position to make, as editor of the *Philadelphia Photographer*, and the readers of the "Quarter Century" will be more than repaid by a close comparison of the methods presented.—*Iron*.

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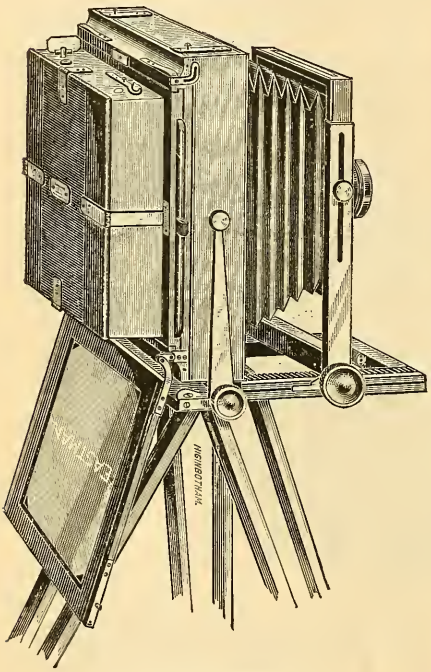
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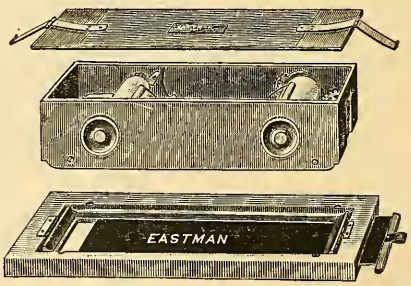
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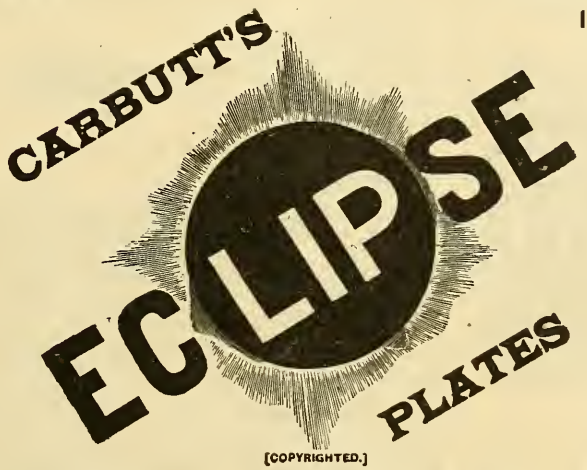
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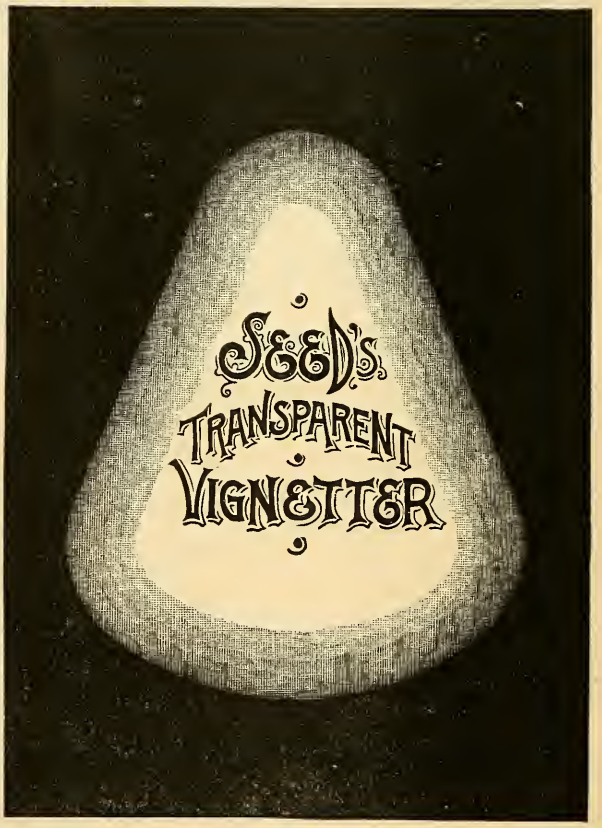
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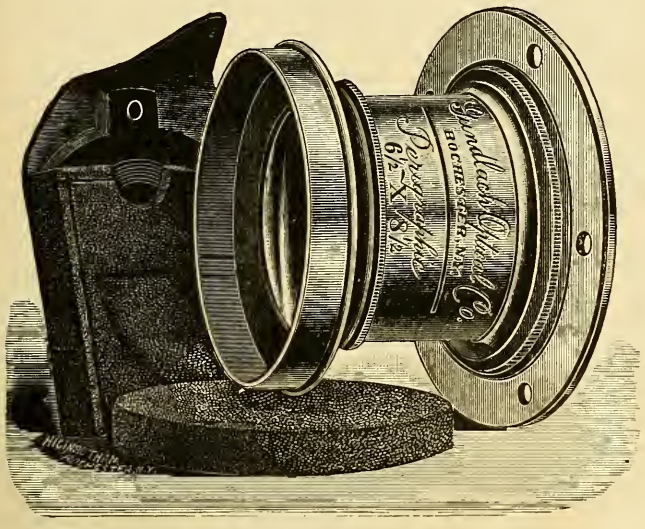
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PRACTICAL ESSAYS ON ART. By John Burnet. Reproduced entirely by Photo-Lithography, by the Photo-Gravure Company, New York. Arranged and Edited by Edward L. Wilson, New York: Edward L. Wilson, Publisher, 1888. Price, $4.00.

The publication of these reproductions will be hailed with great pleasure by all students of art, and particularly by artistic photographers. As many know, the original work was published in three parts, as follows: 1. Practical Hints on Composition in Painting, illustrated by examples from the great masters of the Italian, Flemish, and Dutch Schools, published in 1822. 2. Practical Hints on Light and Shade in Painting, illustrated by examples from the Italian, Flemish, and Dutch Schools, published in 1826. 3. An Essay on the Education of the Eye, with reference to Painting, illustrated by copperplates and woodcuts, published in 1837. The original price was in the neighborhood of $14, and for a number of years the work has been scarce enough to command many times that amount.

It is to be seriously regretted that so many competent draughtsmen and technically first-class photographers have grown up without the advantages of a work of this kind, and the fact is not sufficiently appreciated that the main difference between the artist and the picture-maker lies in the one point of knowing how to choose a position. To expose a plate on a beautiful landscape, develop it according to rule and then *pay another man to print from it*, is the height of the ambition of many amateurs; but let the results of such work be compared with those of the careful student of positions and compositions and they are nowhere. To be able to estimate exposure and calculate the strength of your developer properly are all very well; but add to this the knowledge of where to stand your tripod and how to choose the best conditions of light and shadow, and you are no longer merely a photographer, you become an artist who uses the camera as an instrument of precision instead of making it a toy. Another class of students to whom Burnet's Art Essays will render incalculable aid is the critical class, and here a great aid is rendered to the intelligent public as well, for a critic who thinks he knows, but who judges without stating the principles upon which his judgment is founded, becomes a nuisance to his friends and a burden to society. This trouble can now be readily obviated by a careful study of the Art Essays.—*Iron.*

Reviewers and Practical Readers Say:

THE essays of John Burnet have been the guide and friend of many an artist, who has afterward made a name in the world. And many a one who is know getting gray-headed would willingly acknowledge his indebtedness to that clever writer for a great deal of the knowledge which has helped him on his way. Burnet has published three of these essays.

Dr. Wilson has hit upon the very happy idea of reproducing these three valuable works bound into one volume—with all the original illustrations. The book, indeed, is a fac simile reproduction of the originals, both pictures and text being copied by the aid of photo-lithography.

The reproduction of a work of this kind must be a very costly experiment, but its existence only requires to become known to insure a large sale among amateur photographers, most of whom are beginning to understand that a knowledge of art principles is somewhat more important in the production of pictures than exposure tables and developing formulæ They cannot have a better guide than this book of Burnet's, for not only does it explain matters in a very clear manner, but its precepts are supported by examples from the works of those whose names are writ large on the page of art history.

This book, too, ought to be a godsend to those butterflies of society who go to the Academy and other picture galleries, because it is the correct thing to do. They, as a rule, know nothing of art, but they talk about it as if they did, and Burnet would assist them to a few fresh ideas.—*The London Camera*

WHILE all parts are of great value to the student, we think the part on "Education of the Eye" will be found of most practical value to the photographer, as that organ is very deficient, and much in need of education.

The work is printed in clear, large type, making it very easy to read It is strongly bound, and will prove a valuable addition to any library.—*St. Louis Photographer.*

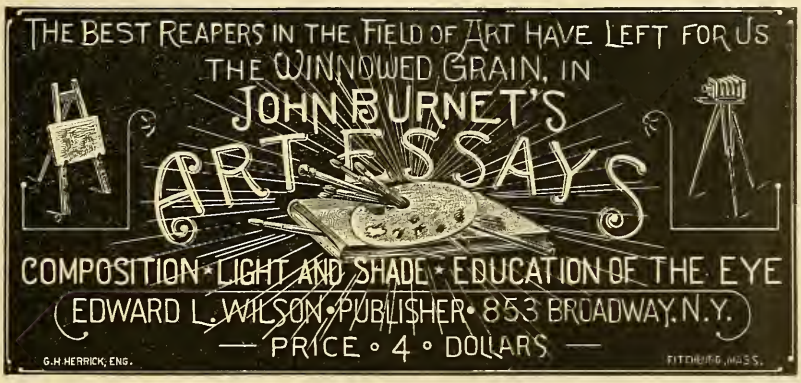
MY DEAR SIR: *Mosaics* and the two numbers of the *Philadelphia Photographer* (for which my best thanks) came duly to hand, together with *Burnet* in his modern garb.

With *Burnet* I am very much pleased, and photographers and all other artists owe you a debt of gratitude for giving them the opportunity of becoming possessors of such a work. There are certain books which do not lose their value through time, but which, being out of print, become exceedingly scarce, and are only to be found in big libraries Hence they are not accessible to those to whom their contents would be of the greatest value and assistance. Any one who, like you, reproduces a book of this kind, and makes available the knowledge contained in it, renders a distinct service in the cause of culture. Yours, sincerely,

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(See next page.)



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I am glad to see you are publishing reproductions of Burnet's Essays on Art. If photographers really cared for art, which I sometimes doubt, and knew the value of these books, you would sell a large edition. I remember well as a boy, long before I had thought of photography, saving up my pocket money to buy one of these, at that time, expensive books. I chose the one on Composition, that admirable essay, which, with its illustrations, is so clear and convincing, I have always looked upon as the very solid foundation of all I may know of art. The other essays I have read and admired but never possessed, for by the time I could afford to buy them they were out of print and difficult to obtain. I strongly recommend these books to all who want to know what is really sound in art.

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To W. I. LINCOLN ADAMS,

DEAR SIR: The "Practical Essays on Art" form the safest guide to all students of pictorial arrangement and composition. It is not a book to be placed on the library shelves to be consulted from time to time, but rather one to be studied daily until all the principles it advances have become a part of one's definite knowledge. Read, re-read, analyze, apply, and then return again to this masterly compendium. One's originality is rarely of value unless based on such a sub-structure of principles as are so ably explained. I would place this in the hands of every amateur and professional artist and photographer in the country, if I could. I hope, since that is impossible, that all students will save their pennies until they can own the book, and thereafter truly *own* it by becoming thoroughly familiar with its contents. Delight in possession of this sort no money can express. With best wishes for the success of this *revival*, I remain,

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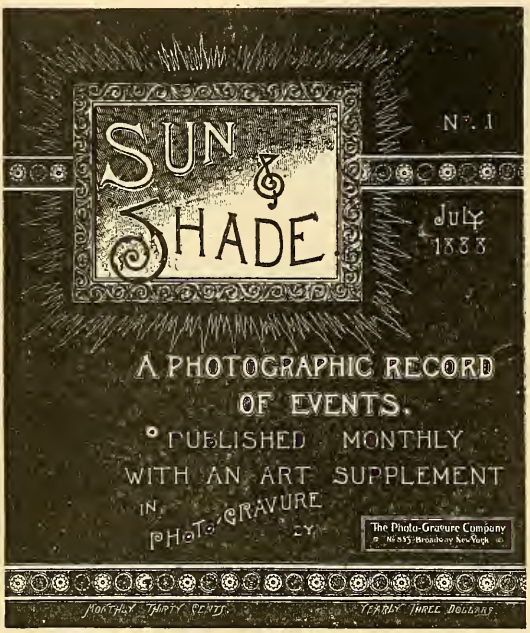
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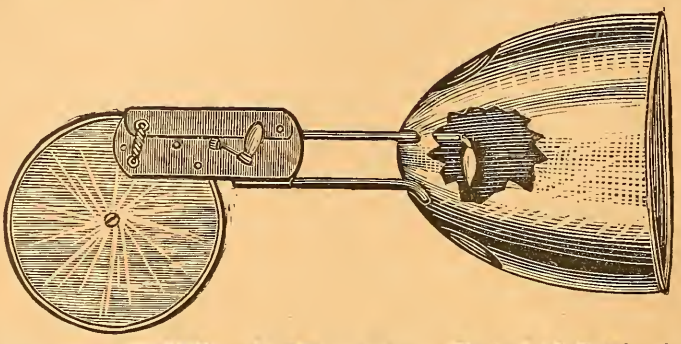
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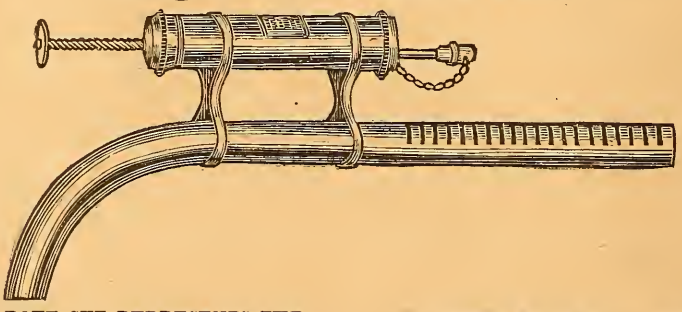
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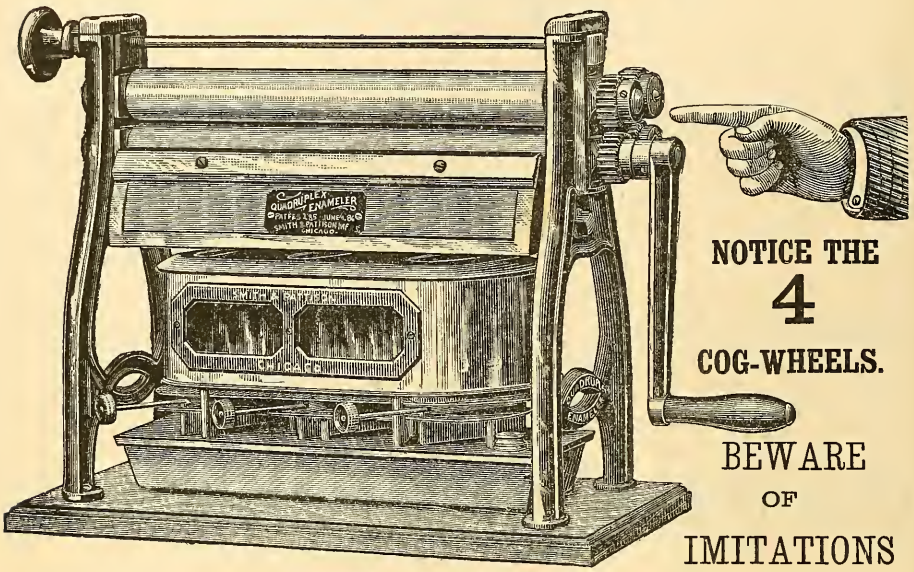
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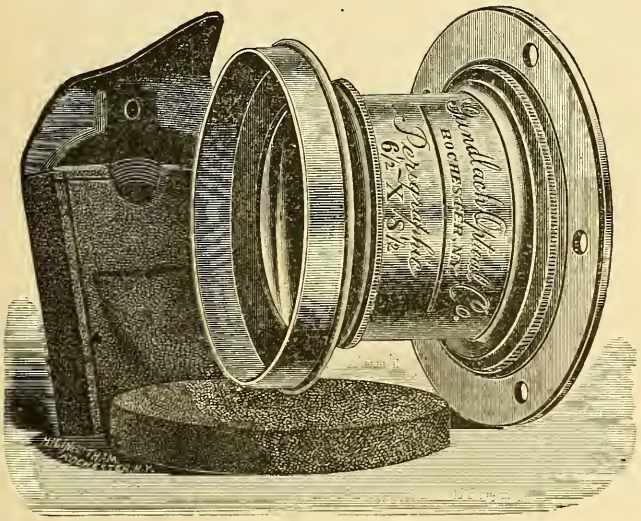
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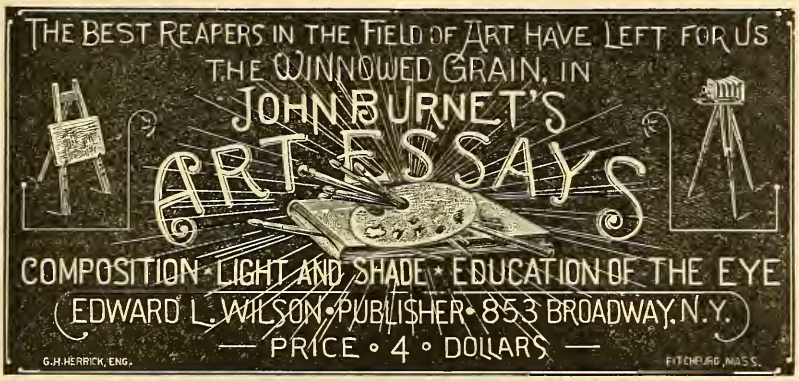
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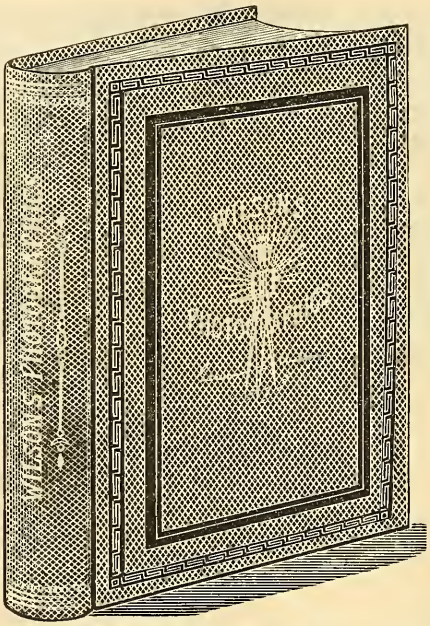
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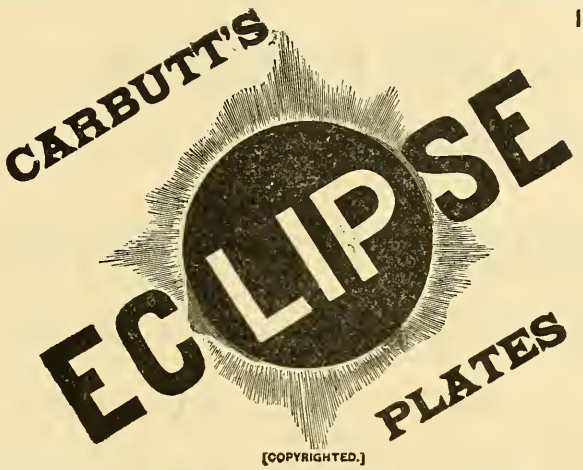
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THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

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HELPFUL HINTS.

BY A. LEE SNELLING.

Sometimes a negative we particularly prize, as a souvenir, after taking a print we find is too flat to give a satisfactory picture. I have tried intensifying with varying results, and will confess to having intensified negatives that did not seem to be one bit better after than before. It was my good fortune recently to have a chat with a well-known amateur of New York, who is an authority on matters photographic, and his conversation turned to weak, flat negatives, one of which he held in his hand at the time, taken by myself. "A negative like this," he said, "must be helped—" "Intensified?" I interposed; "By no means," he answered, "for intensifying doesn't pay once in ten times; but after you have your negative and paper in the printing frame, get a fine, smooth piece of white tissue-paper, and envelop the whole frame in it; the printing will be accomplished much more slowly and the resulting print be found very much increased in strength. Another good way is to use a deeper frame, that will allow of a plain piece of glass being put into the frame, before the negative." This last method is practised by a well-known Broadway photographer for all his vignettes.

Another source of grief and disappointment is to discover that a fine negative is ruined by a hundred little pin-holes all over it, which print black and spoil the effect of the view. There is no reason why it should be immediately sent to a professional to be doctored. When amateurs appreciate the pleasure of making their own prints, and succeed in doing it well, they will confess how little cause they had for showing professional prints with pride as "Some of my work." Retouching is an art, and there are comparatively few at it who do artistic work, when the number of retouchers is considered; but almost any bright amateur can readily acquire sufficient knack with a little practice to materially improve the look of his pictures. Get a small piece of good India ink, rub off some into a little butter plate, and get two finely-pointed sable brushes, and with one cake of Gihon's opaque you are set up as a spotter. With the brush well brought to a fine point, and with very little of the opaque on it, lightly touch each little pin-hole, and close and fill it up, by leaving in its place a tiny spot of the opaque, which is a dull red in color. Go carefully all over the plate, beginning at the top. The opaque will dry quickly, and after making a print you will discover that all the pin-holes now print white, but are all there in bold relief. Don't be discouraged, for after you have toned and washed the print with the last water and are ready to mount, take your other brush and rub it delicately along the edge of the almost dry coating of India ink in the little saucer—the amount required on the brush is infinitesimal—and very delicately and with great nicety, touch out each white spot, getting the color of the print as closely as possible; a little moisture from the lips will lighten

the color on the brush if it is found too black. Many a negative thus treated will make a fine finished print that contains not a single one of the spots, unless you know how to look for them, which, fortunately for us, very few of our friends do.

For retouching I made a frame of a box that held nine-pins, hammered out the bottom, nailed it to upright pieces of board to hold it in a slanting position, and took out the sliding cover and used the slots for slipping into position the negative to be manipulated. A piece of fine white tissue-paper, pasted across the other end, will soften the light and form a good substitute for the ground-glass, if expense is a thing to be considered, for in photography, particularly, every trifle counts. A Faber's Siberian lead-pencil, H.B., will be all required. By all means, begin retouching on the negative you expect to throw away, for it will have to be, without doubt. I have read and studied my book on retouching without finding any real idea of the mark to be made, and experience has taught me there is none but a general scribble-scrabble in which the pencil is allowed to meander around in curls and twirls by itself, all so lightly done, that no single curve shows, and the aggregate obliterates the deeper wrinkles and softens down the imperfections of the complexion by giving the negative one general even tone and surface. Some retouchers make little minute dots, called stippling, as in oil-painting, and exactly similar, only in retouching the pencil is employed instead of the paint brush. I found the former method of light curving and twining lines easier and gave better results, and would advise beginners to start out with a negative of a freckled face as being a most excellent study. The lines must be close, and not visible to the eye, or they will print horribly distinct, and the last condition of that poor negative will be worse than the freckles. Keep little slips of sensitized paper close at hand, and whenever your back begins to ache and the hands tire make a little proof which will be a perfect proof of what success you will have as a retoucher.

Always remember a pin is a handy little thing in many instances, but not the ideal retouching point.

MAGNESIUM LIGHT IN NEW ZEALAND.

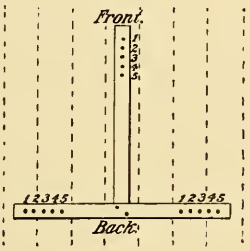
DEAR SIR: Many thanks, indeed, for the collection of photographs you have so kindly sent me. They are very interesting pictures, the blue prints being especially so. This process seems to be well suited for landscapes. I shall endeavor to produce something similar.

Unfortunately this portion of New Zealand does not present many such vivid scenes as you represent, the country being, as yet, uncultivated, and having little to make it attractive. At the same time I am sure there *are* beautiful views to be obtained, and, after a careful study of Burnet's valuable *Art Essays*, one can scarcely fail to find many local applications of their artistic principles. Being an amateur in these matters, the writer is quite incompetent to express an opinion as to the merits of your late work, but if I may judge by the feelings of satisfaction I lately experienced during my visit to the Auckland Art Gallery, I may safely say that the perusal of your book will lay bare some of the most fascinating sources of pleasure and instruction. May you live long to help us by the light of such photographic beacons.

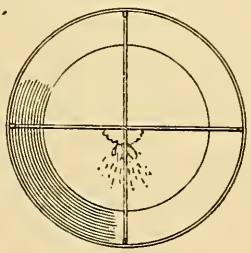
I have posted a few of my productions, which very poorly represent my photographic repertory. My friends usually seize all I make, and really leave me nothing to show. This being toward the end of our survey year, I have been unable to make a fresh batch of prints, but after June 30th I shall have more liberty. The group of children, with our schoolmaster, placed by me on the stage, and illuminated by magnesium light, is the result of my first attempt at indoor photography. I shall shortly make a colored picture of the above, which I think will better represent the scene. Perhaps you will not think me presumptuous if I state the conditions under which the above was "taken."

The exposure was about six seconds, with portrait lens working at $\frac{f}{6.6}$ at a distance of about twenty feet (the hall being full of people at the time). The camera placed on a tripod, and that on a stand made thus

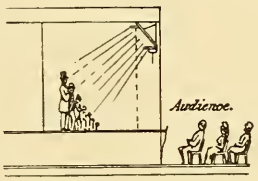
(see cut) placed on the floor. This form is better than the square or triangular article. I should have marked the flooring boards as running at right angles to those shown in the sketch. By their aid it is easy to get the camera square onto the subjects to be photographed. The dots at the three ends represent holes, into which the point of each leg fits, the numbers being at equal



distances from the centre; the fore leg can then be raised or depressed as required. I have not expressed myself well, but you can understand I am sure. What I want to state particularly is the way in which I managed to burn twenty-four inches of magnesium ribbon in six seconds or less. Divide the magnesium into four pieces and make a flat plait, then form a semicircle. Attach this to two wire axes laid across a large milk pan well polished. Fix a match, frayed out, and head embedded in centre of magnesium semicircle, thus:



By the aid of a candle on a pole, light the frayed end of the match, and in a second or two the whole will be ablaze. The pan was then placed ten feet high and six feet in front of the subject, inclined forward so as to reflect as much light as possible. A piece of zinc was placed underneath to catch the ribbon after it had been consumed, the falling of which would otherwise spoil the picture. Where flash light cannot be employed, as amongst the flimsy accessories of a theatrical stage, such as ours, I think this will prove a very useful method of burning the ribbon, seeing that eight ends are burned at once, and that the exposure is, therefore, short.



The subjects, being higher than the audience, were requested to look toward a point on each side the camera considerably higher than I stood, to prevent the sad appearance they would otherwise have. Those on the right side of the group looked toward my left, and *vice versa*, so each subject faced the light more or less, causing a full-faced portrait in the case of those in the centre of the group, the light being placed directly opposite them, and three-quarters faced portraits (as regards direction of light) in the case of those at the sides.

I have written fully, so that any fellow amateurs, trying a similar scene, may do as I have done, and count upon getting a tolerably good picture. I tried the light placed to right side, high up, with a softened light low down at the left, but the result was not satisfactory. This was at a rehearsal.

I have enclosed 19*s*. 2*d*., for which please forward Wilkinson's and Burton's latest books and *Photographic Times Annual* for 1887.

E. H. Hardy,
Government Surveyor, Tekopuru, N. Z.

IN REPLY TO "ARAB."

BY O. S. MORTON.

Some time since attention was called to the fact that there existed considerable diversity of opinion among experts in photography not only as to methods but as to facts. For example, some advocate the use of fast plates; others condemn this. Some

advise the use of small stops; others pronounce this wrong. Some say, make your pyro into solution; others say, you must not, etc. In view of all which it was suggested that it would redound to the credit of photography, and also to the public good, if some remedy could be devised which would, to some extent at least, harmonize these conflicting views. In the last issue but one of the PHILADELPHIA PHOTOGRAPHER, "an Arab," who nevertheless speaks very good English, although his meaning is not always as clear as it might be, says the remedy is to be found at my home. If I only knew where it was hid I'd bring it to the light in a jiffy! "Arab" seems to think that I am groping in the dark personally, and offers a remedy which he says is "too cheap." Perhaps I need the advice, but however that may be, my article was designed to have a much wider scope; and I would again remark that there is wanting among experts that approximation to unanimity of opinion and practice which for the credit of photography and the guidance of novices should give place to a better state of things.

But I do not think this desirable end will be brought about by the remedy proposed by "Arab." He suggests that the lead of Dr. Janeway be followed. But is it likely that folks will follow the lead of *anybody* so long as there are such a number of experts who prescribe the *other* way no matter what his way may be.

Arab says, "I seem to imply that quite a confusion exists." Why, what is my good Oriental friend thinking of? If he would have evidence of it, he need not look beyond his own article. He mentions the developer of a veteran (Mr. Carbutt), to which another veteran (Dr. Janeway) dissents. Who is right? He also says, it has been "put on record that pyro solution a few weeks old requires five grains to do what two grains were supposed to do." Yet in the number of the PHILADELPHIA PHOTOGRAPHER next before that which contained his article, Mr. A. R. Dresser (an example of whose work has appeared in the PHILADELPHIA PHOTOGRAPHER, and who, if I mistake not, obtained a prize at a recent exhibition) says on page 445, "Your papers are going on about pyro and the keeping of it. What bosh it all is;" and then proceeds to give his formula, which he says will keep the pyro "clean and good forever I believe; anyway, I have used it six months after mixing, and found it was as good as the day it was mixed." I don't presume to say who is right, but only that the thing is tangled and ought to be straightened out.

So far as the pyro question is concerned (and this is only one of them) it doesn't concern me to the extent that it may others, for the reason that four times out of five I use the more cleanly ferrous oxalate, but it seems to be rather a reproach that a question of *fact* should be allowed to exist.

Arab also mentions the fact that oxalic acid is recommended as perhaps the best preservative of pyro. This seems singular, too, though perhaps I should not say so, for it has been more than twenty-five years since my college days, and possibly much of what little I then knew about chemistry has been forgotten, and I do not by any means offer myself as an authority on the subject. The study of chemistry was at once pleasing and yet disappointing, because of the element of uncertainty connected with it. In mathematics a train of reasoning would lead to a conclusion the absolute correctness of which was forced upon the mind. The proposition was *proved*. Not so with chemistry. Everything seemed to be ascertained by experiment, and while I may be wrong, yet I question whether anyone can with certainty say what chemical reactions will take place when two or more substances are combined, unless he has previously tested the matter by actual experiments; and while it is true that oxalic acid will not produce any sulphate, sulphite, or sulphide, yet the question arises, Will it not produce an oxalate, and if so, what pranks may *it* play? And further, when chemical reactions of an uncertain character may be looked for, is it not singular that a substance so rich in oxygen as oxalic acid should be the best means of preventing oxidation? But it is hard sometimes to reason about the chemical properties of a thing. We know that one of the best supporters of combustion is oxygen. Hydrogen makes an illuminating gas. Thrown together on lime they

make one of the most powerful of lights. Yet combine them, and the result is water, which certainly will not do for fuel, although one would have every reason for thinking so, if experience did not teach otherwise. Now, inasmuch as the object of a preservative is to prevent the oxidation of pyro, it *seems* to me that as both water and air contain oxygen, as little as possible of either should be allowed in contact with the pyro, and that therefore the solution should be made with as little water as actual use will admit, and that a little glycerine should be added to form a layer on top of the solution (I believe it is lighter than water), and so protect it from the air in the bottle; and lastly, that an acid should be used in whose composition there is no oxygen. But all this on trial might prove disappointing like the water fuel, and oxalic acid may really be better. If it has been *tested* and found to answer, why all right.

Arab also refers to an article on snap shutters, in which, he says, will be found "some truth as to snap-shutter stories." I have glanced over the article, but do not find anything in it about snap-shutter stories whatever. It does, however, remind me of the "confusion" we are discussing, when it states that the Prosch duplex shutter, used with the lowest tension, "gives the fatal secondary or double exposure." Perhaps there was some defect in the particular shutter on trial, or there may be a difference between the shutters of 1886 and 1888; but I have been using a Prosch duplex for about two years, and in justice to the makers I must say that it works most admirably for me. I use the lowest tension nine times out of ten, and have no trouble

In regard to the snap-shot at 5 P. M. to which "Arab" refers, I must ask him, in spite of his own experience, to accept the statement of Mr. Thomas Christian, No. 1418 E. Main Street, Richmond, Va., who made the negative in question, as to time of exposure and also size of stop used (Arab misquotes me as saying "smallest" stop).

A recent examination of the negative (about which I wrote from memory) requires that I should modify my description of the picture somewhat. I find that the shutter was not quick enough to prevent the team being considerably blurred, and do not know but that "microscopic" is too strong a term to apply to the general definition. And yet even without a magnifying glass the individual bricks in the building front can for the most part be distinguished, and I will leave that point to Arab to determine from the print, which I will send him if he will favor me with his address. If he would have a better illustration of the fact that good work can be done with the snap shutter, let him send to editor Wilson for a *print* of the German Market Scene, a photogravure of which appeared as the frontispiece in the PHILADELPHIA PHOTOGRAPHER some time since. It may surprise him.

FACTS AND FANCIES.

NATURAL AND ARTIFICIAL SALICYLIC ACIDS.—Professor Hartley wished to ascertain if artificial salicylic acid obtained by the action of carbonic acid on phenol, is the same salicylic acid extracted from the essential oil of *Gaultheria procumbens*, etc. Using the two products as pure as possible, the photographic prints of their spectra were absolutely identical, from which the professor infers that these two acids are also identical.—DR. PHIPSON *in the Paris Moniteur.*

HYDROQUINONE IN MEDICINE.—It is asserted that hydroquinone has given good results in the treatment of erysipelas, acute rheumatism, etc. *"Hasten to use it while it still cures!"* formerly said a learned doctor, criticising new remedies.—DR. PHIPSON *in the Paris Moniteur.*

STARS AND SPOTS ON ASTRONOMICAL PLATES.—How can we distinguish on an astronomical plate which are stars or which are small spots accidentally due to imperfections of the film?

Mr. Traill Taylor has answered this question as follows: It is necessary, he says, to take two prints at the same time—that is to say—to expose two plates to the heavens, so as to be able afterwards to compare them. Or if we have but one plate at our disposal, it is necessary to prolong the time of ex-

posure. In this way each veritable star shows itself with a small tail, due to the diurnal motion of the earth, whilst the accidental spots (as in the case of the travelled monkey) have none.—Dr. Phipson *in the Paris Moniteur.*

Gelatino-bromide Prints with a Mat Surface.—By drying gelatinized paper prints on a talced glass we obtain great brilliancy, but this to many persons is not pleasing. To obtain a mat surface similar to that of an engraving, dissolve one part of ceresine in three parts of essence of turpentine, rub a Bristol-board with this pomade, and apply the print to it as it is taken from the washing water, press, and dry, after which the print is detached.—*Moniteur.*

An Improved Microscope.—The microscope of M. Thouroude has been modified by M. Nachet as follows: Immediately under the objective is placed a small prism which causes the light to deviate into a tube placed on the side of the microscope. This tube carries the eye-piece and serves for making all the examinations. When the insect is suitably placed, a spring is touched, the prism moves to the side, and the luminous rays ascend the tube of the microscope and form the image on the ground-glass.—*Moniteur.*

The purity of the alcohol used has for many reasons always been an interesting subject for investigation, and from time to time many processes have been given to determine it.

To test alcohol, M. Godefroy places about eight cubic centimetres in a glass and adds one drop of absolutely pure benzine; agitate, and add eight cubic centimetres of sulphuric acid, again agitating. If the alcohol be pure, in about ten minutes it will show a pale pink tint. The liquid may remain colorless. In that case boil for a few minutes, and if any compounds less volatile than methylic alcohol are found in it, it acquires, after exposure to the light, a distinctive brown tint with great fluorescence. It may be discolored from a pale brown to black; this is produced by the presence of compounds more volatile than the methylic alcohol.—*Revue Photographique.*

To Determine by Electricity the Velocity of the Drop-shutter.—The velocity of stops is a question which was lengthily discussed at the last meetings of two of our societies. Mr. Hart and Mr. Varley (the learned electrician) assert that the degree of velocity of a stop may be calculated with very great precision up to the *eight-millionth of a second*, by means of a Morse telegraphic apparatus, placed in electric communication with the stop to be tried. The length of the exposure given by the stop is measured on the tape which escapes from the Morse apparatus. In this experiment, as it is seen, there is no need of plates or light.—*Moniteur.*

A Preparation of Chlorophyl.—Since the time chlorophyl has been used as a suitable agent for making gelatino-bromide plates isochromatic, the question has been lengthily discussed at one of our photographic societies on the manner of preparing this substance. According to Mr. A. Hadding, a member of the London Photographic Association, parsley is best adapted for obtaining chlorophyl. The plant is bruised in a mortar and then steeped in ether. The ethereal solution is evaporated and the residue taken up again by absolute alcohol. This solution, after filtration, is evaporated and yields pure chlorophyl. In this condition the product may be kept for a long time. If, however, it is to be kept in solution, it is necessary to add some granules of zinc, otherwise the solution would soon lose its color.—Dr. Phipson *in Le Moniteur.*

Hydroquinone compared to Pyrogallic Acid.—A considerable number of articles on hydroquinone are now being published. Everyone wishes to give the result of his experiments with the new product. It is evident, however, that there are in the trade several different qualities of this substance, as the results published are very contradictory. Quite recently, Mr. W. Bishop placed in the hands of the members of the North London Society a sample of hydroquinone which he made use of in his experiments. With this substance it

took him a half hour to obtain the same degree of development which he obtained with pyrogallic acid in the space of five minutes.—Dr. Phipson *in Le Moniteur.*

To Determine the Age of Writing by Means of Hypochloride of Lime.—Mr. R. Irvine asserts that it is possible to judge of the age of writing by the action of a weak solution of chloride of lime (bleaching salt). He selected writing of one day, of six months, fourteen years, and twenty-two years. He submitted them to the action of the solution of hypochloride of a density =1.031. Here are the results: In six minutes the one day writing had disappeared; in from nine to twelve minutes the writing of six months had disappeared; at the end of twenty minutes, the two years old writing had partially disappeared, whilst in the same space of time, the six, fourteen, and twenty-two years old writing had scarcely changed. If the hypochlorite solution is not extremely diluted, everything suddenly disappears without regard to age. Dr. Phipson *in Le Moniteur.*

PROCEEDINGS OF THE

Secretary's Office,
Minneapolis, Minn., July 14, 1888.

Executive Session.

Present: President Decker, First Vice-President Motes, Second Vice-President Guerin, and Secretary Potter.

It is ordered that the medals for improvements, inventions, or discoveries, shall be awarded as follows:

George Eastman, one silver medal for "Kodak" Camera.

Otis C. White, one silver medal for ball-and-socket joint, as applied to the photographic chair, rest, and head screen.

C. L. Reutlinger, of Paris, France, one silver medal for meritorious photographs.

George Eastman, diploma for transferotypes.

W. G. Entrekin, diploma for improvements in burnishers.

L. C. Overpeck, diploma for flash-light lamp and apparatus.

C. W. Witherington, diploma for novelties and backgrounds.

L. W. Seavey, diploma for artistic design on certificate.

The Photo-Gravure Co., New York, diploma for superior work on certificate.

W. H. Potter,
Secretary.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

by dr. j. h. janeway, u. s. a.

(Continued from page 515.)

Lantern Slides.

The manipulations requisite for the production of lantern slides can be carried on in the evenings with a much greater rapidity than many other methods of producing pictures. It is a very pleasant occupation to be able to show by the aid of a lantern the results of your work to your friends, and your self-complacency is oftentimes very much increased by their kind appreciation of the pictures presented in an enlarged form upon the screen. A perfect lantern slide must of necessity possess two qualifications: First, absolutely clear glass in the high-lights; and second, when held up to the window or other suitable background, full and distinct details in the shadows. A slide that will bear these tests is sure to give a good picture when projected on the screen. It is a mistake, I think, to print deeper for one kind of light than for another. A good slide will give a good picture with either, by simply turning up or down the light.

You can make your lantern slides in the following manner: By reduction or by contact printing. If by reduction, daylight will have to be used in con-

junction with the special enlarging and reducing camera, previously described, or by the aid of two cameras, which in the end amounts to the same thing. Should you use the camera known as the enlarging and reducing camera, point the end holding the negative—the negative being film in—toward the north, if possible, and elevate it so that in looking through the ground-glass no image of surrounding things, such as trees, buildings, etc., will be reflected upon the ground-glass. Now place a mirror on a white surface, at an angle to act as a reflector, to throw the light more evenly through the negative. Reference has been made to the handy tables published for the distances required between negative and lens, and lens and ground-glass or dark slide. If, however, you have a full plate $6\frac{1}{2}$ x $8\frac{1}{2}$ negative, which you wish to reduce to the lantern-slide size, $3\frac{1}{4}$ x 4, all that will be necessary for you to do is to pull out the front bellows till it gives you twenty-eight inches from the negative to the front combination of your lens, clamp it there, and mark it upon the base board; then pull out the back bellows far enough to measure fourteen inches from the lens to the ground-glass or dark slide, clamp, and mark this also, so that you will have no necessity to measure at any future time. A turn or two of the focussing screw will give you your picture delightfully sharp.

Reducing by two Cameras.—The two cameras face each other. In one the negative to be reduced is placed in a kit to hold it, in the space usually occupied by the ground-glass or plate holder, and turned toward the light; the lens board is then to be removed. The lens of the other or copying camera is inserted in this aperture, and the space between the two cameras is covered by a black cloth or the ordinary focussing cloth. Now focus in the ordinary way, and you will find that the use of a good reading or magnifying glass is oftentimes very necessary, in order to procure sharpness in the darker parts of the picture. It will also save you much trouble and annoyance, if you will have marked on the ground-glass the exact size of the slide, and as near the centre as possible.

By Contact.—You proceed in the usual way as in printing transparencies; but as the negative may be larger than the slide, it will then be necessary for you to pick out the best part of the picture, either from the centre or partly from the centre and well toward one or the other edges. Have a good silver print of the negative before you to compare with the negative in the choice of the part you most desire, using at the same time a thin slide cover to give you the size required. You will now have the opportunity to exercise your art perceptions, be they greater or less; and, if less, do not be in a hurry in the choice of that part of the negative to be reproduced. The superimposing of a good piece of thin glass of the lantern size, as mentioned above, first upon the negative and then upon the print, will also aid you very much in the selection of the most desirable part of the negative; the balance of the negative can be blocked out with colored paper. Here, again, I must strongly urge upon the necessity of studying art. Study the art of composition, the effects of light and shade, and especially educate your eye with as little delay as possible. For this purpose there are several good books, but none as valuable as Burnet's *Art Essays*, lately reproduced by our good friend, Dr. E. L. Wilson.

Up to within a comparatively short time it was denied that good lantern slides could be reproduced by the use of dry plates, but so rapid has been the improvement in these plates, that they are more largely employed now than formerly, and are capable of producing very beautiful lantern slides. Nevertheless, many still hold fast to the wet plate, insisting that they are the best. We should choose a very slow plate—Ripley's lantern, Carbutt's "A," or Anthony's special. All are good. If unable to procure these, an ordinary commercial slow dry plate can be used on a pinch, but they are objectional on account of greater thickness. But it may be as well to begin with them, in order to get the hang of the process. For here, in order to produce good slides, there is a greater demand for increased neatness of manipulation, though not greater skill, than in the production of a gelatine negative. Many an amateur who can make fair negatives, which will give prints of average

excellence, fails utterly to turn out even passable lantern slides, simply because of a lack of neatness and cleanliness in the necessary manipulations. Having chosen from your negative, if larger than the lantern slide, the particular part you wish to reproduce, you place the negative, film side up, in a deep printing frame, resting upon a clean piece of glass; upon the negative at the chosen spot, lay your sensitive plate, film side down, and upon the back of the plate place a soft pad; close your printing frame with care, so as not to disturb the plate, then expose it to white light. As I stated before, I prefer the German student's lamp, at a distance of twelve to fifteen inches. The exposure will require about fifteen or twenty seconds for ordinary negatives, but, of course, the amount of exposure required will depend upon the density of the negative. Take the slide to the dark-room, or, if there, turn out the white light and turn on your developing lantern. You can, by having several printing frames, make quite a number of exposures before beginning to develop. Remember what I have already told you, carefully dust the plate before putting it into the printing frame, and then gently blow over it whilst removing it to the developing tray. But here I would recommend that the negative be also carefully dusted before applying the sensitive plate. You develop the exposed plate in the usual way, using a modified ferrous oxalate, preferably Carbutt's, or, as I prefer, Ripley's developer, as prepared for glass positives and transparencies; continue the development until the image is slightly stronger than it is intended the picture shall appear, for it will lose somewhat in the fixing bath. After rinsing off the developer immerse it in a strong solution of common alum, then wash and fix in a clean hypo bath. If the film is stained, place it in the cleaning solution. Even with the utmost care there is apt to be a certain opalescence of the film, which is difficult to get rid of. A prolonged soaking in a saturated solution of alum in pure water is the best thing that I know of for this defect. When thoroughly dried, the film side should be given a thin coating of varnish—the diamond varnish being the best—to prevent moisture forming on the film; and then, when dried, it is ready for mounting. The tone of lantern slides can be varied from a warm brown to a velvety black. Long exposures and a weak developer—by increasing the amount of water—with more bromide, give us warm brown tones. Short exposures and undiluted developer give dark or black tones. The subject of the negative should influence you in the choice of tones. Lantern slides may be intensified, if necessary, by the same solutions used for intensifying negatives, but great care should be exercised that they be not made too dense.

Mounting.—After the plate is dry, and before varnishing, clean the back carefully with a soft rag dipped into a weak solution of ammonia. Any speck of dirt on the plate will be exaggerated greatly on the screen, and nothing detracts more from a really good lantern slide than the want of care exercised in having the back clean. Your plate now being clean you must give attention to the covering glass, which should be very thin and clear from all blemish. Covers known as crystal glass can be readily obtained from the dealers. These covers must be perfectly clean and dry. I would recommend that they be immersed for a few minutes in a weak acid solution to remove certain markings caused probably from the separation, and well washed in clear water, not sparing the rubbing; then place them in warm soapsuds and again give them a good scouring, rinse in clear water, and stand them up to drain; when nearly dry, rub them with a soft cloth dipped in alcohol till dry and well polished. By these means your covers will be absolutely clean. Having previously prepared your binding slips, which should be cut from paper soft enough and of texture sufficiently open to absorb the mountant and become quite limp when moistened with water or with the paste to be applied. Needle paper is a very good kind of paper to use, and the color quite pleasant, being a very dark blue. The strips should be cut about fourteen inches long and about three-quarters of an inch wide. Some prefer more and some less, but this is entirely a matter of taste. For your mountant do not use pure gum arabic and water alone, for it will invariably crack and

leave the glass before long; to obviate this, a little sugar or glycerine is recommended to be added to the gum. Flour paste does very well, as also most of the starches. But before applying the binding slip it will be necessary to interpose between the lanterd slide and its cover a mat, as it is called, to cut off imperfect or objectionable parts of the picture, and thus enhance its beauty. These mats are generally of dark color and cut in different forms. Squares with sharp corners and with corners cut concave; parallelograms trimmed as above; parallelograms with one end curved in dome form; circles, etc. The proper or improper choice in the shapes of these mats adds greatly to or deteriorates the appearance of the image upon the screen. Oftentimes you leave too much sky, and if the slide is mounted with what is called the conventional mat, it is passed by without a remark. Cut off some of the sky, and beauties are seen that were not observed before, though existing on the slide. So you see that here, also, you will have an opportunity to exercise and cultivate your artistic taste. Always try several different forms of mats, noticing the effects produced by each, choosing that one that seems to give you the most pleasure in viewing the picture before mounting your slide. Your art studies, especially in composition, will aid you much in your choice of the proper style of mat. Having chosen your mat, place it carefully over the slide, and upon it the thin glass cover, coat your binding slip with paste to within one-half or two-thirds of an inch of one end, lay it upon a pad of blotting paper, or some soft paper, and grasp the positive, mat, and cover with the two first fingers and thumb of one hand and bring down one corner of the glasses upon the extreme end of the slip, and as nearly in the centre of the slip as possible, pressing down to engage the paper. Now turn the glasses and so wrap the paper entirely around their edges until the unpasted end is reached, which in time is cut off. By having one end uncoated you save your fingers from becoming sticky, which is annoying to say the least. With the finger and thumb of the disengaged hand the paper is now bent over upon the sides and pressed tightly into close contact with the glass, taking a little care so as to get the corner portions to overlap neatly. The slide is then either named or numbered, care being taken that these shall always be on the same side of the slide. Some place the label on the film side and others on the back. Whichever side you adopt stick to it, to avoid blunders in exhibiting. The completed slide is now laid aside to dry, and when dried, with a soft, clean rag, moistened slightly, remove carefully any excess of paste that may have escaped from under the binding strips. Spots of dried paste are not beautiful, especially when enlarged upon the screen, and certainly do not improve the picture. Please remember that you cannot exercise too much care or cleanliness in making lantern slides.

(To be continued.)

ON DEVELOPMENT.

BY WILL H. MOWREY.

THE first and most important step in developing dry plates is to have a proper light to develop by. Lately I had my attention called to a few cases of trouble with plates, and in three found the cause not in the plate but in the light used to develop by. Post-office paper was used in these cases. My experience teaches me that this is not at all times safe; the color begins to fade the first day it is put up, and it don't take long before trouble begins. The best and cheapest way is to put in a light that is absolutely safe, and from experiments I have made with differently colored glass and papers, the only one which proved safe was copper-flashed "ruby" glass. There is one thing that must always be kept in mind, that is, "There is no light but what will affect the plate if it is exposed long enough to it." Actinic light diffused through an improperly colored glass or paper does more damage than a crack in the side of a dark-room. We cannot be too careful with our plates; the least amount of light of any kind the better while under development. When I first used the dark-room I use now I had trouble when plates were developed in the early part of the day, and upon trying the light, by placing a plate in a book and exposing half of it to the dark-room light, found it could

not be exposed two seconds without showing a line. I took the glass out of the window, found four orange-colored panes, one on the other. I put in one of ruby and tried it again; got the line after half minute exposure. Put another on the first and tested again. This was better, but not safe. Put one more on the rest, and found no line after five minutes' exposure; but by holding the plate up to the glass found it would fog the plate in about two minutes. These experiments were tried by daylight about one foot from the window; window faces the skylight at right angle with sidelight; size of glass, 12 x 17. After trying these experiments it has convinced me that too much care cannot be taken while having plates under development, or any other time, and of course the more rapid the plate the weaker the light should be while developing, and I think this one of the reasons why rapid plates are more difficult to use than slower ones. Most of the plate-makers print on their boxes, "Open in 'ruby' light only," others say proper light, and give the above test, and if you will try it you will find that the only safe light is "ruby."

Here is another experiment that I tried. Made two instantaneous exposures of the same subject, developed one in post-office paper light, other in ruby, with the developer the same proportions. The one developed by the yellow light resulted in a faint, thin negative with no contrast, had an overtimed look with the plate the same color where it was not exposed along the edge; the other by the ruby was clean and clear, with full graduation from deepest shadow to highest light, with clear glass where it was not exposed.

Here is how I account for the difference. The plates were exposed but a short time in the camera, and in developing by the yellow light enough diffused actinic light was admitted through the paper to overcome the exposure in the camera in a "small degree," for if it was in a large degree it would totally destroy the first exposure and spoil the plate. If this plate was kept in the developer long enough, perhaps it would get strength enough to print fair, but it would not do to keep it in the light while doing so. When a plate is being developed which you know is not overtimed, and it starts to come up right, and all at once it begins to fade, you can make up your mind that the actinic light has got upon the plate in some way. Look to your window; see if it is safe before developing another plate. This principle of second exposure of plate we used in the wet-plate process with children. When we knew there was not time enough, we would take a black cloth and hold it before the lens and expose the plate for an instant; and many negatives I have saved in this way. But it would not do to expose too long, or it would fog the image out entirely; but with dry plates when developed in an improper light, the fogging goes on and the plate is dosed with this and that to get the desired strength, until the negative is more fog than anything else, and takes, as we often hear, from five to twenty minutes to develop an instantaneous exposure. I have made a good many instantaneous exposures, and I have yet to get one which took five minutes to develop. My trains were made very quick, and were developed in less time than that. Where any one can use up so much time is more than I can see. Here is a developer which I have used going on five years. It works equally well on Carbutt, Cramer, and Seed plates, which are reliable plates. With this developer the image comes up right along, and does not take a half day to develop a negative.

Pyro	1 oz.
Water	8 ozs.
Sulphurous Acid . . .	2 drachms.

Add acid to water first.

Sulphite of Soda .	40 grains to 1 oz. water.
Carbonate of Soda .	40 grains to 1 oz. water.

Use equal parts of soda solutions, using an actino-hydrometer to get the desired strength, which is much easier than weights; these two mixed together make the alkali solution.

I use two large bottles for the sodas, and take from these thirty ounces of each, forty grains to ounce, and put in a third bottle. Add from twenty to thirty grains of bromide to one ounce of pyro, as the case may be, using none when developing instantaneous exposures. With these have a strong

solution of salts of tartar, and if it don't come up enough add a little.

To develop use two drachms of pyro, two ounces of alkali; this is normal. I always use a little more pyro to begin with, and add alkali as needed. This will make negatives of a nice steel color, and with splendid printing qualities. Fresh hypo must be used with every batch of plates developed.

In developing a number of plates I use a little of the old that was used on the preceding plate. After using this developer a little while you will find the right amount to be used best suited to your work. I have been asked what I do with undertimed plates. When I find they won't come, they go into the sink; an undertimed negative is a poor thing at any price; and if care is used in the exposure you will not be troubled with that class of negatives.

[*Translated for The Philadelphia Photographer.*]

URANIUM STRENGTHENING.

This strengthener, due to Selle, of Potsdam, is very easily applied to collodion plates, whilst its use presents some difficulties with gelatine plates. These difficulties arise, according to Dr. Eder, from the fact that the surface of the gelatine film is greatly hardened by the red prussiate of potash contained in the strengthener, which prevents the solution reaching the image. Mr. E. Vogel has arrived at good results by adding acetic acid to the strengthener. He gives the following formulæ:

One per cent. Solution of Red Prussiate of Potash	50 c. c.
One per cent. Solution of Nitrate of Uranium .	50 "
Crystallizable Acetic Acid	10–12 "

The negative, *well washed*, is placed in this bath until the desired intensity has been obtained, then washed from ten to fifteen minutes; if a longer washing is resorted to the intensity diminishes, which may be advantageous when there has been over strengthening. Here is another formula, with nitrate of lead, according to Eder:

Nitrate of Lead . . .	4 grs.
Red Prussiate of Potash .	4 "
Water	100 c. c.
Crystallizable Acetic Acid	10–12 "

The plates acquire in this bath a pale gray tone. This tone may be modified in several ways. Thus, for a negative having half-tones, we may plunge the plate in a bath composed of

Perchloride of Iron . .	1 gr.
Water	10 c. c.

In this bath the plate becomes blue; it may be colored brown by plunging it in weak ammonia.

For cliches without half-tones (engravings, etc.), great vigor may be given them, either with the aid of permanganate of potash, or bichromate of potash and ammonia, or of chloride of copper. The permanganate gives a dark-brown tone, the bichromate, followed by the ammoniacal bath, gives an orange tone, and the chloride of copper a reddish-brown tone. The author prefers the uranium strengthener to that with lead, on account of its great simplicity.—*Moniteur.*

POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 441.)

Drying and Mounting Albumen Pictures.

The pictures should be taken out of the last wash water the instant that no fixing soda can be noticed. It is customary to lay them between blotting paper or upon absorbing pasteboard, and let them dry until they possess just that degree of moisture which they should have for mounting. Then they are trimmed in the customary manner and laid over one another so that they will not dry out any more.

For mounting good fresh starch paste is the best to use, more rarely gum, glue, etc. All these should be used fresh; old, acidified pastes are to be avoided. The following is a good receipt for making starch paste: Shake 20 grammes of starch well with 16 ccm. of cold water, so that the starch-pap

caused is uniform and thick flowing. This is poured by degrees into 250 grammes of boiling water, stirring well all the time, then taken from the fire and stirred well until cool; should little lumps still appear it should be squeezd through a piece of linen.

The drying of the mounted pictures should be done slowly so that the mounts will not appear crooked and no cracks show in the albumen. Of course the stretching should be used which will prevent crookedness. He who pastes dry exposes the pictures to cracks which will occur all the easier the thicker the albumen. For very heavily albumenized paper it has been recommended that a little glycerine should be added to the last wash water.

An important point in the pasting of pictures is the stretching of the paper. This is, as recent experiments have proven, very important, particularly if the pictures were very wet when pasted on. It has long been known to practitioners. The extension longitudinally is 1.3 per cent., and in breadth 3.6 per cent., while by pulling the stretching can reach 2.34 per cent. and 8.59 per cent. respectively. It stands to reason, therefore, that the pictures should only be cut lengthwise of the sheet, because one involuntarily pulls the pictures lengthwise in pasting, and thus the influence of uneven stretching would be neutralized. The size of the sheet does not always accord with this wish. The high importance, however, which this stretching must have to the practical photographer has caused the raw-paper manufactory in Rives to make a new size, 53 x 63 cm. (13 kilo.), which allows one to cut from it twenty cabinets, $10\frac{1}{2}$x$15\frac{1}{2}$ m., lying together lengthwise of the sheet. This new size affords important advantages. It can be obtained at the author's factory.

The above-mentioned experiments, which proved mathematically the extension of the paper, were published in the *British Journal of Photography*, November 21, 1885, and showed that the stretching was the least in the above-described methods of pasting with paste and then drying upon wet mounts. Relative to the preservation of dry mounted prints, a fixed rule is to be observed: they should never be rolled up from the inside, but if they cannot be laid away flat, which is by all means the best way, then they should be rolled with the albumen layer out, because otherwise the dry albumen sheet, made brittle by the sensitizing, would cause cracks and flaws. Very slightly albumenized paper will not have these cracks if rolled in, but when the albumen is thick they occur as the pictures get the dryer.

The use of blotting-paper and absorbent pasteboard for drying moist pictures has been abandoned by some photographers. These, even if not impure in themselves, take on impurities by frequent use. Little particles of dust, salt, etc., found there can cause faults upon the wet sensitive albumen. English photographers, therefore, use for drying, cotton stuffs which contain no size. These have the great advantage that after using for some time they can be washed and made clean.

The Finishing.

The burnishing and retouching belong too much to the manual part of the work, and to that part of the work requiring artistic understanding, for this little book to enter into a thorough explanation of them.

Receipts for wax, retouching essence, varnish, etc., used in this work, are given in the appendix. More to the purpose of this work is the description of

Gelatinizing.

The pictures set aside for this purpose should not be mounted, and need a particular retouching, *i. e.*, the ordinary retouching must be covered with collodion. The retouching by the brush would otherwise dissolve in the fluid gelatine and be obliterated.

So far as it is possible in regard to the tone, the retouching should be done with lead pencil; moreover, for the color retouching there must be a drop of collodion allowed to fall upon it, or the whole picture must be covered with it. For gelatinizing there is needed good, unblemished, not too weak, plate glass, which is to be cleaned either with talc or plate-polish. The glass is covered with a thin raw collodion (1 to $1\frac{1}{2}$ per cent.) just as the portrait plate of the collodion process is covered, allowed to cool, and laid in water to wash off the alcohol com-

pletely, and at last dried. The plates can be used for gelatinizing after a quarter of an hour. Care must be taken not to take them from the water until it runs smooth and even from the collodion sheet. He who does not wish to wash off the alcohol, must allow the collodion to evaporate for six hours, or better still, for a whole day. Liesegang recommends a raw collodion of 1 part wool, 50 parts alcohol, 75 drops ether, with some drops ricinus oil. The same author also recommends that the edge of the plate be covered with albumen so as to prevent the pictures from leaving the glass until it is cut loose. If it comes apart before it is perfectly dry, uneven places occur and diminished gloss, because the gelatine drying still more forms scais. The author always wipes off the talc-powdered plates with clean dry linen, and has never observed any separating.

A pure gelatine solution is now prepared of 1 : 10 to 1 : 12, done best by heating in the water-bath, then filtered through fine linen, or thin skin, and held for the dipping of the pictures at a temperature of 36° C. The pictures are to be dipped singly into the gelatine solution for a few minutes, until the picture has assumed nearly the temperature of the gelatine, and laid with care and as quickly as possible upon warmed collodionized glass plate, the picture side of the collodion sheet inverted of course. The surplus gelatine solution must be instantly squeezed out with a rubber roller (a polished strip of glass answers just as well), and at the same time are removed any air blisters, and the picture is pressed firm and smooth to the collodion sheet. Before the pictures become dry, and nearly before the paper begins to dry, each one of the pictures must have a light mount pasted on the back, and this is to be a little smaller than the picture. This can be done with the same gelatine solution, or still better with thick dextrine solution (yellow dextrine) by dipping them in and then squeezing them out. This thin mount is to prevent the penetration of the paste in the subsequent mounting upon the ordinarily thick card. After about twenty-four hours the drying will be ended. The pictures are then separated from the glass, the collodion skin is cut through round about each picture, and they are pasted upon thick mounts. With another and simpler receipt a large collodionized plate, freed from alcohol, is covered with ten per cent. gelatine and cooled and allowed to dry. In using it the gelatine sheet is moistened by pouring water on it, and as many pictures laid on it with the albumen side down as there is room, a rubber cloth spread over them, and the pictures well squeezed out with the rubber roller, whereby all blisters will disappear. Now from the edge of the plate is removed with a knife a one centimetre broad strip of gelatine and collodion layer, and as soon as the pictures are dry on the surface, a piece of good, clean writing paper is pasted over the whole plate, so that it sticks fast to the edge of the glass plate. On the letter paper a cheap, thin cardboard is pasted. As soon as the whole is dry the whole sheet must be cut through on the inside of the known edge, whereupon it loosens itself and springs away as smooth as looking glass. The pictures can then be cut out as one pleases and pasted upon the mounts.

The drying of the gelatine sheet up to a certain degree before the application of the pictures, the author holds to be particularly important for the success of the gelatinizing, since an undried, scarcely stiffened gelatine sheet is much too soft to permit of a firm and perfect application. It is better in every case to allow the gelatine sheet, which should be pretty thick in order to obtain the highest enamelling gloss, to dry out so far that it shall obtain so much firmness that the supplementary superficial wetting cannot soften it much. The pictures to be applied must also, manifestly, be moistened thoroughly and swollen up.

(To be continued.)

[*Translated for The Philadelphia Photographer.*]

RESTORING FADED PRINTS ON ALBUMENIZED PAPER.

The Vienna Photographic Society had given to Mr. H. Zandaureck, of Teschen, an albumenized print, toned and fixed, since seventy days, but entirely faded and yellow; he toned and fixed it the second time, and returned it to the Society com-

pletely restored. For this a silver medal was awarded to him.

Here is his method:

I. *Toning Solution.*

A.—Distilled Water . .	500 c. c.
Tungstate of Soda . .	100 grms.
B.—Distilled Water . .	400 c. c.
Carbonate of Lime (chemically pure) . . .	4 grms.
Chloride of Lime . .	1 grm.
Chloride of Gold and Soda	4 grms.

Make the mixture in a bottle of yellow glass, well agitating; allow to rest twenty-four hours, then filter into another bottle of yellow glass, which is to be well stoppered.

For about a sheet of albumenized paper take

Solution A . . .	150 c. c.
Solution B . . .	4–8 c. c.

When the prints have been well washed they are to be placed, one by one, in this bath. They should not tone too quickly, when it is warm not before ten minutes; consequently the bath should not contain excess of gold. With this bath fine purple tones are obtained.

II. *Fixing Solution.*

Solution A . . .	150 c. c.
Hyposulphite of Soda .	15 grms.

The prints are carefully washed and placed, one by one, in the fixing bath, in which they are allowed to remain until their yellow color has entirely disappeared, which takes place, in certain cases, in from three to five hours. After fixing, carefully wash.—*Revue Photographique.*

PRACTICAL POINTS FROM THE STUDIOS.

At the July meeting of the Paris Société d'Etude Photographique, M. Le Breton communicated a process for obtaining engravings in half-tones, and exhibited some prints obtained by it. He takes a sheet of emery or sand-paper of very fine grain, which he inks with a roller. He makes a print on paper, and transfers the dotted lines to his cliché. The rest of the operation is done in the ordinary manner, either on copper or zinc.

The same gentleman said that he made line reproductions in the following manner: He applies a sheet of clear gelatine over his drawing; traces with the point, and, instead of using, as usual, red chalk or blue, he fills up the hollow lines with ink, as is done in copperplate engraving. The ink is then discharged on India paper, and a transfer made on stone or zinc.

M. Ferry showed a positive print, the negative of which was obtained directly, natural size, in the camera, by means of one of Darlot's double objectives.

M. Mendoza exhibited some negatives and some positive prints made with chloride of silver, and mounted on glass for windows; these prints were generally satisfactory. He gives the following process for developing the negatives:

A.—Distilled Water . .	500 c.c.
Carbonate of Soda, pure, .	150 grammes.

Disssolve cold.

B.—Distilled Water . .	500 c.c.
Sulphite of Soda, pure, .	75 grammes.

Dissolve hot.

Add to B ten grains of hydroquinone, and only make the mixture after cooling. Use equal volumes of each. This bath should not be used new except for instantanieties, even those made without sunlight. When the bath has been used to develop a certain number of prints, it may be utilized for time clichés.—*Moniteur.*

Line Engraving, Simplifying Engraving on Stone and Copper-plate.—Make on tracing-paper a drawing (process well known to all engravers), and ink this paper as you would do a copper-plate; make a print on sized India paper, and transfer it either to stone or zinc. In order to avoid the adherence of the India paper to the gelatine, and thereby preventing its taking up the transfer ink, it should be soaked in glycerine and well wiped. The print will be reversed. In certain cases, this is not important, but in others it may be different. In this case it will be necessary to make a counter-print, which does not impair the sharpness of the work. The Waterhouse process, which is very delicate, is only ap-

plicable to bitumen of Judea after exposure, whilst with the Le Breton process the grain is made directly on the cliché, only requires one operation, and may be used in lithography.—*Moniteur.*

Process of Mr. Kleffel for Hydroquinone Development. — The formula which has given him the best results is the following:

A.—Hydroquinone .	.	10 grammes.
Sulphite of Soda	.	50 "
Distilled Water	.	500 "
B.—Carbonate of Potash	.	25 "
Distilled Water	.	200 "

Leimtypy.—Leimtypy is an invention of Tcheque, and not of German origin. This process yields clichés with sharp lines, resistant, but possessing delicacy and softness. A sheet of gelatine is exposed to daylight under a photographic negative coming from an autotypy, a drawing, an oil painting, an inanimate or living subject. The gelatine is fixed on a zinc plate, then developed by means of a chemical product. The preparation of the gelatine, affixing it to the zinc, and development, constitute the secret of the invention. The development takes only from two to four seconds, after which the cliché is mounted on wood, and is ready for finishing.

Mr. Husnik has made known the conditions at which he offers to sell the right in France: for Paris, fifteen hundred florins. For the other cities, from one hundred to fifteen hundred florins, according to the importance of the locality. For all France, ten thousand florins. He will impart the process to all purchasers. From five to eight days are sufficient to acquire it.—*Moniteur.*

Strengthening Clichés.— Some days ago I wished to restore the black tone to a cliché which in strengthening had become yellow, and for this purpose I used a bath of chlor-hydric acid at 15 per cent. My cliché returned to the point at which it was on coming from the bichloride bath, that is to say, I completely destroyed the effect of the bath produced by the ammoniacal bath after washing; I then caused the ammoniacal bath to act again, and my cliché rose to the desired point. This discovery pleased me much, as it sometimes happens that the ammonia is allowed to act too long a time, and in this case it suffices to plunge the cliché in a chlor-hydric acid bath at 15 per cent., and then repeat the action of the ammoniacal bath.—M. de Laporterie, in *L'Amateur Photographe.*

Utilization of Old Photographic Clichés.—Here is the use that I make of old photographic clichés. I take two clichés that have been carefully scraped and washed, I place between them a print that I wish to frame, and I keep them in place by means of four bands of red rubber placed parallel to the sides of the plate. The frame is easily hung by raising the upper band. It would also be easy, if desirable, to attach the two plates by the edges. These plates might also be used for the production of positives by means of the emulsion of Blain, Rossignol, Tondur, etc.—*La Nature.*

A Simple Mode of Gelatinizing Prints.—The glass plates, well cleaned, are rubbed with a little talc in powder, then wiped; the edges are coated all around with gum arabic, which is allowed to dry. The plate is then coated with collodion, and it is useless to impart to it the motion used in operating with wet collodion; the plate is simply placed on end, so that the collodion drains from the lower end. This manipulation is performed the preceding day. On the next day dissolve the gelatine by placing it in a wide-mouthed vessel filled with water; this vessel is heated over a water bath. As soon as the gelatine is dissolved the solution is poured into a flat plate, and on it are floated a piece of strong white paper, somewhat larger than the glass plate, and, at the same time, a print. In about half a minute the print is to be removed and placed, the image side down, on the collodionized side of the glass plate; a sheet of paper is placed directly over it, press to remove the gelatine in excess. This is received in the dish. The plates are now exposed in the shade for two hours, then in sunlight for two or three hours. When desiccation is completed, the paper and the print are detached from the glass plate. Should there be no sunlight,

recourse may be had to artificial heat. To mount the print, prepare a solution of gelatine sufficiently thick, using hot water; with this solution, and with the aid of a brush, coat the edges of the back of the print, which is to be quickly placed on a cardboard and pressed by means of a fine cloth. The image adheres very strongly.—*Photo. Archiv.*

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

BY THOS. PRAY, JR.

(Continued from page 534.)

I HAVE been both pleased and amused by the article on page 455, in the PHILADELPHIA PHOTOGRAPHER of August 5th, on Dry Plates; pleased because Mr. Morton has turned to investigating rather than for asking advice, in which (the investigation) I wish him every success; for, asking for advice, according to his own word, is attended with difficulty in following. He seems to have stumbled upon the same snags as those who preceded have found, some of which have not even been referred to in the pages of the PHILADELPHIA PHOTOGRAPHER; but the reason why I have referred more particularly to this article is the following:

He stumbles on the numbering of plates. It may, perhaps, be cold comfort to him, but it is a fact that his professional brethren in the best studios of Boston, New York, Chicago, and everywhere, do the same thing every day with almost every make of plates, and the end is not yet. I quite sympathize with him in another thing, which I now propose here to criticise. He asks a dealer for "Cramer's 15," and the dealer probably does not keep "Cramer's" plate or some reason or other, which may be, that he can make more money on somebody's else; and so the amateur takes some other plate and not the one he wants, because he cannot get what he wants when he wants it. The "Cramer 15" is one of the most honest plates in the market. It is almost as sensitive as "Carbutt's B," which is usually marked 16 or 17. Now, right here, Morton has opened a question which is one of the most vital to every amateur. The disposition has been growing among amateurs, or a portion of them, to use fast plates, snap exposures, snap development, and the results are snappish in the extreme. To such an extent has this been carried within the last four years that it is next to impossible to obtain a slow plate, and "Cramer's 15" has only been on the market for a year. It is a plate which should be cultivated, for it is slow, elegantly adapted to landscape, architectural, or other subjects where fine modulation is required, and where the best results can be obtained by common-sense exposure and common-sense development.

A word to Mr. Morton and other amateurs. Whenever a stockdealer recommends you to take some other plate, or something different from what you asked for, always betake yourself to the nearest stockhouse, and abandon any dealer who interjects or obtrudes his advice on you or your work; in other words, drop him once and for your good. If all amateurs would do this we should find that stockhouses would not run upon some particular plate to the exclusion of all others, and sometimes would deal nearer the truth than they do, and would do more justice to others. The platemakers meet occasionally to form a "combine" or "trust," or some other system of regulating prices and discounts, have a big dinner, and in about forty-eight hours they forget what the prices and terms of the trust were, and then the stockdealers keep the plate on which they get, as a rule, the largest discount and percentage.

Amateurs, if they would take the thing in hand, could very shortly set down on this effectively. Professionals are annoyed in the same way by the tramp plate-pedler, and in consideration of "taking our plate," because of an extra five or ten per cent. rebate from the bill on settlement, and it does not show on the bill, yet, like the old captain's suit of clothes, "it is in the bill just the same." These are abuses. The amateur has no business to say what plate a stockdealer shall keep, and if the amateur has common sense, or uncommonly good sense, he will not allow the stockdealer to dictate what plate he shall buy.

Now, "after exposure." Whatever make of plates our friend Morton uses is unknown to the writer, but we should not have to guess many times, for we have been troubled inthesame way many a time by the most variously interposed stripes, streaks, blotches, or specks, and we have never found a single make of plates in the United States that could begin to compare in variety, the curiosity, the distribution of these very peculiar stripes, streaks, and blotches, with the plate he probably refers to. If these plates are "bought on faith," they are used on experience, and frequently with most undesirable results; and then for quite a period of time they will be found to work nicely, and when you are almost reconverted you will then stumble upon some of the peculiar markings again, until you finally abandon the plate and take up those which are made with brains and upon honor.

Then, another trouble, which without doubt our friend has met, as well as others, has been the most peculiar replies with reference to complaints made whenever these markings appear. The holders, the camera, the slits through which the covers of the holders slide, insufficient dark-room protection, and every other known and unknown excuse save one, is always not far off. These things are provoking and annoying, and they may not be strictly honest, we mean touching responsibility, but in the writer's experience of several years the platemaker *never* is to blame. As to the "bromide of conscience," there are some plates in which this is found, particularly in the G. Cramer Dry-plate Works' production. I have not found from the first to the last any plate more reliable, regular, and uniform, and if anything ever happens it does not require any extended correspondence to obtain repairs, which is usually effected by the short and sweet "send them back," and they send you as many more. There are others to which this will apply in a slightly modified degree, and there are still others to which it will not apply if the truth be told, and these are points which every amateur must settle; and two-thirds of them would not believe if they were told, as they go upon the girl's principle of trying it and squealing.

One more observation and we are done: "Why cannot some sensitometer be agreed upon, and all plates numbered with reference to this standard." The plates of one maker will not agree, as a rule, with the sensitometer number of another. The same maker's plates of the same emulsion, if we follow the numbers on the box, will not come within two or three numbers of themselves, as we lately proved by a half gross bought from the maker's agents. Whatever the emulsion is marked the same will not agree with itself into a large percentage, but of this more will be found in the PHILADELPHIA PHOTOGRAPHER before many months.

As to the closing question of his article: "If these things are desirable why not adopt them? The answer is short and sweet. If the amateurs and professionals would join hands there would be no use for many of the plates in the market. They would lie upon the stockdealer's shelves, and would become "stale." If the same constituency demanded a reliable plate, and would not for the sake of two, three, or ten per cent. extra discount use some of this "stale stuff," they would shortly get what they want. If they would demand a standard screw they can get it from any one of a dozen machinists with brains in the United States. Messrs. Pratt & Whitney, of Hartford, Conn., spent $50,000 in standardizing screw threads, and can make a screw to enter ten-thousandth of an inch, so that one of four million can be changed anywhere in the world without the slightest hesitancy or trouble; but they cannot make that kind of a screw to compete with the slop-shop work found upon too many so-called lenses in the market. These various little things make a photographer either healthy and happy, or they make him sour-faced, and sometimes foul-mouthed. They make him a lot of expense and trouble, and as yet no movement has been made to put out of the market all these interferences, if not worse than that, for the same reason that every man who buys goods runs away with the idea that he is just a little bit sharper than his neighbor, when as a fact, his neighbor gets just as big a discount as he does in the same surreptitious way. Professionals and amateurs are somewhat to blame that this kind of stuff

is peddled over the country to annoy both professionals and amateurs. But there is one redeeming feature: good plates can be had, not quite so cheap, and some of the platemakers do their work honestly, regularly uniform, and in excellent conformity to sensitometer standards; but these platemakers keep busy as bees, and are not of the genus tramp—"to sell."

PHOTOGRAPHIC PRINTS IN COLOR.

In *La Nature* (No. 741), we find a formula for obtaining sepia photographic prints without using silvered paper. This formula may serve to obtain prints of all colors by mixing any inert powder, red, black, etc., in the water, until the consistence indicated for the sepia, but it seems to me it is necessary to warn the novice that this solution should be spread and dried in the dark-room, furnished with yellow glass, in order to prevent the potash from becoming insoluble before exposure in the frame. This process is excellent for the reproduction of lines, but it does not give, I think, very readily, half tones. I have obtained sepia prints with salted paper, passed through the silver bath, by toning it in the combined toning and fixing bath, composed as follows:

A.—Water	. . .	1000 grammes.
Hyposulphite of Soda		700 "
B.—Water	. . .	500 "
Chloride of Gold, pure		1 gramme.

Add 150 grammes of the solution B to the whole of the solution A, eight or ten hours before using. This solution may be used indefinitely, if care be taken after each use to strengthen it in the ordinary proportion of gold for each sheet that is toned; some fresh solution of the hyposulphite should also be used. The gold solution should be put into the hyposulphite solution and not the reverse, which would render the mixture turbid. This toning-fixing, which gives slightly reddish tones with albumenized paper, shows some very pretty effects for landscapes printed on salted paper, which resemble sepia drawings.—L. Vidal.

THE OPEN CORNER.

We have had to neglect the Open Corner lately for want of room. During the period of neglect some interesting contributions have come, and we shall try to dispose of them now, for the public good.

One contributor says: "I have only lately worked at the business, and am already dissatisfied with my productions. I am bound to improve, or quit the business. I sometimes feel that I have missed my calling. My worst trouble is lighting, and, I might say, posing; I do not know how to control my light; there is so much glare that my results are flat. What shall I do?"

First, throw your impatience out of the side window. You have no right to expect to become a perfect photographer in three months, or thirty-three months, or one hundred and three months. Study the work of others; read the articles on "Skylights, and their Arrangements and Use" in *Quarter Century* or *Photographics*, or any other good book, and follow the example of those who have gone before you. If you find you have too much light, you simply need to use your head a little and contrive how to reduce the quantity; and so on, all through. Photography, perfect and pure, is not accomplished without head, and, moreover, without a head that has something in it.

The following growl comes from a veteran. He says: "What am I to do? I am besieged on all sides by beginners, for information. They forget that I must earn my bread and provide for the future of my family; and seem to think that my time should be entirely at their service, out of "love for photography," as they put it. I send you a letter to show you what class of men are willing to let somebody else do the experimenting and hard work, while they pocket the money."

We hardly know how to advise in cases of this kind. There was a time when we advocated that everything in photography should be *given;* but in these plenteous days of books, and thorough books, and books by experts, where almost everything under the sun can be found, they should be con-

sulted rather than that the veteran, who feels as above, should be annoyed. Beginners should not think that because a man is skilled in photography he is bound to become an encyclopædia for all who wish to consult him.

L. B. writes as follows: "*Quarter Century* and *Photographics* have been very helpful to us, though they have occasionally plunged us in the depths of despondency by showing us how little we really know, and how much we need to learn before we can reach the standard of our ambition. We sometimes fear, too, that under their influence our ideas of what we wish to attain are growing faster than our progress in reaching them. They have pointed out to us what an abominable light and surroundings we are working with, and we are determined to secure better quarters."

L. B. writes in the right spirit; a great deal better spirit by far than the feeling which is so plenteous that there is "nothing more to be learned." If our books and our magazines have the effect described, we are indeed very happy, for it is just such results that we wish to produce.

The prosperous photographer in our larger towns seldom realizes what photography means in smaller places where the hard worker is subject to the failure or prosperity of the crops, and where business in the whole year amounts to less than a month of results in some of the larger places. Here is the way in which one of these humble workers gets along. He says:

"I must say that I owe all that I know in relation to photography to my books and magazines. I have a photographic library that cost me $55.00. I consider myself unfortunate, though my means are so small, if I cannot expend ten or twenty dollars a year for books. I am only twenty-five years of age, and am healthy; I see no reason why I should not continue to improve by such means for a long time to come." Here is an example worthy of imitation.

THE right ring comes with the following from Colorado: "I undertook photography three years ago for the pure interest and love of it. I had many disappointments at first; I failed time and again, but I knew I was at fault somewhere, and never gave up. After having gone through the mill, I am not at all surprised that many become disgusted and give it up; but I am surprised that so many never get beyond a certain degree of perfection. They go so far and there stick, and do not seem to care to hunt up their errors and correct them."

In this last sentence our young friend has focussed the camera right on the sharpest point. When our results are not as we wish them, or as we know they should be, the first thing to do always is to find out the cause of the error. Frequently when the cause is found, the error is as good as corrected, for the correction becomes an easy matter. In no thing as in photography is it more certain, that when things do not work right something has been done wrong that causes the bad result, and it only becomes a question of search to set the matter right, for surely a search will end in correction.

THE following suggestion is made by an earnest subscriber to our magazine, and it may be that some commissionaire or other will be willing to follow his suggestions:

"When the P. A. of A. met in Chicago last year I wanted to go, but my finances were too limited. A friend who lived there attended and gathered copies of circulars, pamphlets, pictures, samples of brush work, etc., and sent them to me. It made a large bundle, and, in connection with reports and magazines, gave me an idea of what was there. Would it not be a good scheme for some one to attend the next convention, gather such bundles and send them to photographers who will express their willingness to pay for them?"

PROF. C. Piazzi Smyth makes the following comment on the landscape of Mr. Mowrey which appeared in a recent issue of our magazine. He says:

"Pure photography comes up at last to an acme I have long been looking for and working for, viz., that with the best of definition for the still life, and, therefore, a small stop to the lens, there shall be such an

approach to instantaneous action that water shall be given with the instantaneous ripple of water all over its surface, and, therefore, the photo-picture looks like water in the fluid state, and not like rather dirty, but solid and immovable ice; for that is what it must come to if the taking occupies the duration of many ripples passing a point. Moreover, this splendid illustration is composed *a la Burnet;* a good triangular arrangement of the dark foreground of groupings of mere stones, with point and pointer's "focus" given to it by one of them being so much darker than all the rest; while both the stones and the scraggy bushes growing among them are as sharply defined as any eye need desire. Then came the half rustic poles and planks of the landing stage, sharp of course; about them and beyond the dimpling water surface, and in the extreme distance the other side of the lake, quite microscopic. All this too, on a dry plate! That is the *ne plus ultra* of positive advance in photography. A new harvest of subjects, I am sure, may now be gathered in, with the charming and instantaneous effects of sunshine and ripples on the water as they appear in southern climes, especially if the plates are sensitive enough to take foliage without regard to wind; for in some of the most beautiful southern regions, such as the very gardens of the Hesperides in the Fortunate Isles, a trade wind blows every day, and keeps the leaves in a continual gentle rustle; exceedingly grateful to the *dolce far niente* of the lazy inhabitants, but murder alive to the photographer where plates require such a prolonged exposure as a single whole second. But now, when will you venture in one number, or book (for which you shall be allowed to charge the public a suitable price), to give on pages, one after the other, both a silver print, and half a dozen different "process" printings from the same identical, original negative? But do not be in a hurry about it."

A California correspondent remarks as follows, with reference to our illustrations from paintings, photographs, etc., with art criticisms;

"I am very glad you call attention in this excellent way to good pictures. In dramatic conception the paintings of Munkacsy are grand, their conception fine, and without a doubt he is the greatest painter of the age.

As photography is so closely allied to painting, both as a branch of art and as a means of mechanical reproduction, I have often wondered why magazines devoted to photography do not give more attention to painters and their works. While claiming so much for their art they seem to stand apart from them. Now that the cities of the East are being endowed with galleries of art, and the attention of the people is in this way being directed toward art, I hope to see grow up and be fostered a genuine art spirit in America. We are an original people, take advantage of the teachings of other nations, assimilate them, and then produce something new. As we are without prejudice against any school or people, we can combine the good qualities found in English, French, German, or Italian art."

This correspondent's views coincide exactly with ours. If there is one desire that we would express above another, it is this.

The following sentiment is worthy of consideration in a wide part of the Open Corner. It is from a veteran who writes thus:

"Don't you think it is about time for the P. A. of A. to plead quits in playing second fiddle to the stockdealers, platemakers, and I do not know what other kind of "kers." To my mind it has become a perfect farce. The very thing it was started to avoid, it has been swallowed up by, body and breeches, and it is simply now led by the nose by those who are making use of it for their own personal gain. Shame on the P. A. of A!"

OUR PICTURE.

Among the prize-takers of last year was the well-known Milwaukee artist, Mr. S. L. Stein. He long since sent us proofs of his successes, with permission to republish them for the good of our readers, but, owing to the choice we made for our purpose, we have delayed in order to have its issue come along with the time of year most suitable. It is called the "Harvesters' Return" from

the work of the day. It requires but little imagination to picture the *merry six* returning from their work with aprons and hands filled with flowers and fruits gathered on the way, and it required no more imagination for the quick photographer to see a picture in them, and to arrest them a moment while he caught them in line. Mr. Stein has made a great many beautiful pictures, but he will not often excel this one for its "go," for its distribution of light and shade, and for its generally graceful composition. It is a rare good catch.

There is none of that look about these fair maidens which says,

"Strew me with blossoms when I die,
And lay me 'neath the earth below."

On the contrary, their day of labor only seems to have invigorated them for the coming of their mates, who sing as they come, the "Italian Song,"

"And Cupid taught you how to wound—
How to wound hearts Dan Cupid taught."

The phototype reproductions were made by Mr. F. Gutekunzt, Ninth and Girard Avenue, Philadelphia, and are first-class examples of black and white gelatine printing. We hope, presently, to reproduce something more of Mr. Stein's work. He gives us the following particulars:

"I was several years in the drug business; then a dry goods clerk, and then came to Milwaukee to be a photographer, and here I am, having gone through storm and sunshine since. I have secured a first-class patronage here, and am trying to keep pace with the times.

"The Milwaukee Convention did a great deal for me, inasmuch that it showed me how many are ahead of me in the profession. I am striving hard to get up to them; progress is slow, but I have lots of 'Dutch grit' in me, and hope to succeed some day.

"As to the technical part, about lenses, developer, etc., I can furnish you with nothing new; your valuable journal contains all. I use the Cramer plates in preference to all others, with the yellow prussiate developer, published by Mr. Cramer about a year ago. The haymaker photos were made with a No. 6 Euryscope lens. For life-size work I use a Dallmeyer's 21–25 rapid rectilinear. I have no special way of working."

A GOOD EXAMPLE.

We present below a report sent us by Mr. W. F. Van Loo, of Toledo, Ohio, of a professional picnic of the photographers of that city, held August 22d.

The programme was as follows: 10 A.M., boat leaves for park; introductions, etc., on the trip. 11 to 12, group photo., "We'll get our picture took." 12 to 2, dinner: "developing time." 2 to 3, base ball: "fix your plates." 3 to 4, running contests, "slippery films." Prize, engraving and frame, by Sessions & Kohne. Boys' running contest; prize, carved oak frame, by Sessions & Kohne. 4 to 5, boat race; prize, silver oarsman, napkin ring, by George Kapp. 5 to 6, fishing contest, ladies only; prize, a fine jointed rod, by Whitaker & Co. Committee of Arrangements: W. F. Van Loo, E. J. O'Leary, and D. B. Claflin.

Mr. Van Loo says every studio in the city was closed except one, and the proprietor of that one was a stranger. It is a pity he was not roped in, as such occasions will do much to promote good feeling and raise prices. We commend them, and therefore give place to a partial report of the brilliant affair from the *Toledo Blade*.

The Toledo photographers, with their wives, children, clerks, and employés, took a vacation at Presq'isle yesterday, and had what they all claim to be the jolliest little picnic that any one ever enjoyed. They went down at about ten o'clock, and a special effort was made to see that everybody was acquainted with everybody else during the boat-ride.

Before luncheon the cameras were brought out, and they "got their picture took" in a large group, and groups by families.

At noon they "developed time" by spreading the white cloths upon the pretty lawn and enjoying an appetizing luncheon that could not be excelled. Captain Curtis and Charlie McLain entertained the party by rides out in the lake in their yacht "Fanchon," after which the artists hied themselves to the ball grounds, where they played a game that should go on record.

Messrs. Trost and Smith chose sides, and the game was called at the close of six innings, with a score of 14 to 15, in favor of Smith's side. The umpiring of Mr. Brewster, and the official scoring of Mr. McKecknie, were the most interesting points in the game, together with a home run made by one of the men on three strikes, with a passed ball.

The running contests followed. Mr. Louis, of Arthur & Philbric, won the men's prize, which was an engraving and frame, presented by Sessions & Kohne. He had seven competitors. A carved oak frame, presented by the same firm, was the prize won by Fred. Henning in the boys' contest. There were nine entries in the boat race from the steamer wharves to the boat house, and it was one of the most exciting features of the day.

The ladies gathered on the shore and watched with bated breath for the victor. It was a close one. Finally, one boat sped ahead of the others on the home stretch. A lady from the grand stand exclaimed, "Oh, see! that little boy is going to win." Everybody had the laugh on "that little boy," who was no one else than the jovial Van Loo, but he came in ahead by several boat lengths, and received a handsome silver napkin ring, a prize offered by George Kapp.

But the most intense interest was centered in the fishing contest for ladies only. The entries were, Mrs. McKecknie, Miss McKecknie, Mrs. Van Loo, Mrs. E H. Alley, Mrs. Ellwell, Mrs. Chesebro, Miss Chesebro, and Miss Mullen. The prize was a handsome jointed rod, given by Whitaker & Co., to the lady catching the most fish in one hour.

The fishing was done off the bridge connecting Presq'isle with the mainland. At the end of the hour Mrs. Alley and Mrs. McKecknie were a tie, each having caught three fish. A half hour more was allowed them to settle the matter, but neither got a nibble. It was agreed to that the ladies should guess at the date of a coin to see who should have the prize. Mrs. Alley guessed that the date was odd, but it was even, and Mrs. McKecknie bore off the rod in triumph.

The party returned to lunch, and at about nine o'clock came back to the city. Mr. John Koella and his sons had taken their instruments with them, and on the return trip all indulged in a delightful hop.

Mr. Seth Jones, who represents the Eastman Dry Plate and Film Company, of Rochester, was present by invitation, and he added a great deal to the enjoyment of the day. He carried with him one of the famous little Kodak or detective cameras, and he stole a half hundred views with which to remember the occasion.

The whole affair was successful beyond all expectation, owing almost entirely to the energetic efforts of Mr. Van Loo, assisted by Messrs. E. J. O'Leary and D. B. Claflin.

The "day off" will be repeated next year.

WORLD'S PHOTOGRAPHY FOCUSSED.

THE Convention of Photographers, just held at Birmingham, England, was a great success. We give place to one or two of the interesting papers read, and wish that we had space for all of them.

THE *Photographic News* says that some of the papers read at this Convention had a strong tinge of commercialism about them. We wonder what our good contemporary thinks of some of those read at our Convention?

After all, suppose some of the papers did exhibit a tinge of commercialism. Are not the interests of the dealer and buyer so identical, that they should work pleasantly together; and would it not be wrong if a dealer hid his light under a bushel, and kept the buyer and user from knowing of his improvements?

Still our English brother may think that conventions are no places for dealers to ventilate their enterprises, and we are half disposed to think the English brother is right.

IN the hall where the Birmingham Convention was held circulars were distributed and boxes for donations placed in behalf of the Benevolent Association's proposed orphan fund. This was good. If photographers can be drilled to think a little for somebody else besides themselves, we think it would prove a means of assistance to

them. There is nothing like doing something for somebody.

Some of the English amateurs are grumbling at hydrochinone. One of them says that he applied the new developer for about an hour; result, no image whatever. This is not so very surprising, for it is not an infrequency for amateurs, and experts as well, to forget to draw the dark slide when they attempt an exposure. We never knew a plate so treated to yield even to the persistent efforts of hydrochinone.

For twenty years we have been trying to induce our contemporaries and the world to spell the name of our distinguished New York astronomer, Mr. Rutherfurd, with two u's and no o. We continue to persist.

The *Photographic Instructor*, the new work by the editor of the *Photographic Times*, received some very excellent notices in the British and foreign photographic magazines. It well deserves them.

On the other side, "dontcherknow," they call him the "shamateur;" on this side the "immature;" never mind, however; when you can equal his work always, you may call him names and make faces at him.

The current issue of the journal of the Camera Club is devoted largely to the record of pleasant excursions made by members of the club with their cameras. Our English friends, however, have had to battle with a great deal of bad weather during the past season.

Mr. H. P. Robinson, the poetical and perfect photographer, personally conducted a party of fellow-members of the club on August 11th, at Tunbridge Wells. What a rare treat it must have been to have heard the words of instruction from his lips, and to have seen him *actually* at work with the camera.

The editors of the *International Annual of Photography* are also highly complimented by our foreign contemporaries on the successful issue of their splendid book. We think we discover a little artery of envy running through the remarks of the aforesaid notices.

The excellent paper of Dr. J. J. Higgins on "The Disk of Confusion as Presented by Photographic Objectives," has been reprinted in the *Photographic News*. This is a commendable bit of enterprise, because many of the signs and figures in the aforesaid article were made on purpose for it at considerable expense.

The subject of greater height of stereoscopic slides is being discussed by the English journals. We think if some of the American views could be seen they would be considered quite high enough.

The current issue of the *Photographische Correspondenz* presents a fine photo-engraving portrait of our old friend, Charles Reutlinger, the distinguished Parisian photographer, who died recently. It is a good likeness of a face full of soul and tenderness, and we hope to reproduce it presently. Mr. Reutlinger's pictures recently took a prize at our Minneapolis Convention, but he will never see it. His illness was brief, and his useful life was cut down, alas, too soon. He was one of the best photographers and one of the most modest of artists that we ever knew. We regret that we shall no more have our pleasant and profitable chats with him when visiting at the French capital where he was so well known.

The same number of the *Correspondenz* is beautified by a photogravure of an oriental subject from a negative made by Prof. Fritz Luckhardt, of Vienna. One could tell that it was a Luckhardt picture without being told, for there is an individuality about his compositions which cannot be mistaken. They are always excellent, and we hope some day to give our readers another sample of his handiwork.

At a recent meeting of the Society of the Friends of Photography, in Berlin, Prof. Cohn exhibited a number of successful pictures of the gray cataract upon the eye, and of the eye freed from this after an operation had been performed. The pictures were taken by means of the benzine flash light and were very successful.

At the same meeting of the Society, the President recommended, in consequence of

several complaints of bad results in development—fading, etc.—to collect the old oxalate developer, and first to manage the development with this, and then, only when necessary, to add fresh developer later. In this way, he said, many plates might be saved, which, with a fresh developer, would be lost; moreover, a greater mellowness and softness, and yet abundant strength will be obtained.

[*Translated for The Philadelphia Photographer.*]

HYDROQUINONE DEVELOPMENT.*

BY VISCOUNT DE LA TOUR DU PIN.

When our learned colleague, M. Balagny, laid before the society this winter several very interesting communications on the part played by hydroquinone as a developer, two currents of opinion were formed on the value of this reducing agent. Some placed it much above pyrogallic acid for the development of instantanieties; others pretended that the reputation of hydroquinone was greater than it deserved and that this developer did not possess, by a great deal, all the qualities attributed to it. Wishing to investigate myself a process so much discussed, I resolved to experiment with hydroquinone in the development of clichés of short exposure. It is the results obtained in the course of these experiments that I now wish to make known to the society. Whilst I do not care to claim the priority of the formula which I here give, I wish, however, to remark to the society that my observations were made during the months of January and February, and if I did not make them known before, it is because other occupations did not afford me the leisure to do so. The first experiments that I made with the hydroquinone developer, according to the formula indicated by M. Balagny, gave me satisfactory results. I obtained cliches that were soft, transparent, of good color and sufficiently vigorous, but distressingly slow in the development. I then compared the results obtained, on the one hand with this formula, and on the other hand with the developer containing pyrogallic acid and carbonate of potash. I used plates underexposed, but having had the same exposure. Pyrogallic acid gave me more intensity, but also more hardness than hydroquinone. As to the details in the shadows, I found no appreciable difference between the two developers. I repeated the same experiments a great number of times with plates of different makes, and always pyrogallic acid gave me cliches more intense, but not more distinct than those obtained with hydroquinone. I then asked myself, if, by modifying the proportion of the elements contained in the formula given by M. Balagny, it might not be possible to obtain a developer of more energy, and especially, more rapid. To obtain this end, I varied, in the developing bath, the proportion of each one of these elements, as well as the degree of concentration, and I found:

1. That it is possible to vary within very considerable limits the concentration of the bath, and the ratio between the quantities of carbonate and hydroquinone contained in this bath, without sensibly modifying the final result (I always obtained, nevertheless, more intensity by reducing the quantity of carbonate and increasing that of the hydroquinone).

2. That the smaller the quantity of sulphite contained in the developer, the greater the rapidity of the development, without affecting the purity or the final intensity of the cliche, but that in this case also the bath had a tendency to become decomposed. When the bath becomes decomposed during development, it loses almost all its energy and the print is not developed. It is therefore necessary that the developer should always contain sufficient sulphite to prevent this objection. These observations induced me to establish the following formula, by which it is possible to develop, in a few minutes, an instantaneous print made in normal conditions, and to obtain in less than a quarter hour everything that is possible to get out of a cliche completely underexposed. I will add that in using in this manner the hydroquinone developer, I was able to attain, if not to exceed, the energy of pyrogallic development, which I had not been able to do hitherto with the other formulæ. Here is the formula that I recom-

*Communications made to the French Photographic Society.

mend: I make my bath in such a way that for 80 cubic centimetres of hydroquinone, it contains:

Hydroquinone . .	1 gramme.
Sulphite of Soda . .	2 grammes.
Carbonate of Soda . .	10 "
Water	67 "
Total . .	80 grammes.

I here suppose the products to be pure and separated from the aqueous portion, so as to show better the proportion of each element in a given quantity of the developer. In practice, it suffices to make solutions more or less concentrated of hydroquinone, sulphite and carbonate, and to mix them at the time of development so as to obtain the indicated proportions. It is not indispensable strictly to observe these proportions, it suffices to come as near to them as possible. It may even be advantageous to still further reduce the quantity of sulphite that I indicate, if the want of exposure is very marked; but we should not exceed certain limits that practice will make known, as we might risk meeting with the trouble mentioned above, that is to say, the decomposition of the bath during development. Comparing this formula with those heretofore given, it is seen that it differs from them chiefly by the very small quantity of sulphite that it contains. This reduction of the sulphite to a *minimum* is, in my opinion, an essential condition for obtaining the *maximum* energy that it is possible to reach with the hydroquinone developer. In reading the report of the last meeting, I find that one of our colleagues, M. Tondeur, had expressed the same opinion in regard to sulphite of ammonia in pyrogallic acid development. To resume, the hydroquinone developer used as I indicate in making instantanieties, possesses over its congeners two advantages which merit, methinks, to be taken into consideration, that is to say, a much greater rapidity in the development, and a greater intensity in the images obtained. I now purpose reversing the question and making experiments with hydroquinone in the development of overexposed cliches.

At another meeting of the society I will report the results in full that I may have obtained.

[*Translated for The Philadelphia Photographer.*]

ON THE DEVELOPMENT OF BROMIDE PLATES, AND A PROCESS FOR COMPARING THE DIFFERENT DEVELOPERS.*

BY J. B. TONDEUR.

For the development of bromide cliches, two systems are generally adopted. In one, the divers agents of which the developer is composed, are weighed beforehand; in the other, the different factors are successively added as they may be required. The first makes the operator an unconscious machine; the second requires a great deal more practice and skill, and the results are often uncertain. After having made a number of comparative experiments, I have adopted a mixed system with which failures are unknown. I will describe it, but before doing so, it is useful to explain the method which I employ for comparing the respective values of different developers; it does away, I believe, with all cause of error.

On a photometer, formed of a series of longitudinal strips of increasing opaqueness, and numbered, I place a sensitized plate; then, covering the whole with several sheets of white paper I expose to the light. Returning to the dark-room, I cut the plate into two or three parts perpendicular to the lines of the photometer, and I develop the pieces in the different developers, then fix and note the results. It would be superfluous to enumerate all my experiments; I will only give you the principal conclusions.

Among the developers I commence by eliminating the oldest, that with ammonia, because it is necessary to moderate the action of the alkali by some bromide, and, admitting that these agents are exactly weighed, every time that a bottle is opened, a portion of the ammonia is evaporated and the formula is modified.

Ferrous-oxalate readily gives fine clichés, but it requires a longer exposure than pyrogallic acid.

Hydroquinone is high-priced, and we find in the trade different varieties with which

* Paper read before the French Photographic Society.

dissimilar results are obtained. It possesses the great advantage of giving clichés of beautiful color, with fine details in the shadows and rapidly coming up.

Our colleague, Mr. Hiekel, has been kind enough to give me the English and American formulæ which have appeared up to the present time; I have tried them, but I think that, in order to obtain the maximum result with this product, the bath should only be used once, and exactly in the manner I will describe for pyrogallic acid. The old baths may be used with advantage for the development of chloride positives.

Let us now come to the sulphite, which is found in variable quantities in all the formulæ. This product is sold in the solid or liquid state, it is rarely pure, and in six samples I only found one that was pure, neutral, free from sulphate; this explains why it is that this agent is sometimes used for retarding, sometimes for accelerating, and sometimes even for a developer. My opinion is that the use of impure sulphite is the cause of numerous failures in the alkaline development. A simple experiment will show us the advantages and the defects of this product and in what quantity it should be used.

Place a plate on the photometer, as we have said above, cut it into three pieces and plunge them into three dishes each containing 100 cubic centimetres (3 fl. oz., 3 drachms) of water and 2 decigrammes (5½ drachms) of pyrogallic acid.

To the first I add nothing; in the second place one-half c.c. (8 minims) of sulphite of ammonia, pure and neutral, at 30 per hundred; in the third, 3 cubic centimetres (48 minims) of the same sulphite. Now pour in each dish 1 cubic centimetre (16 minims) of a saturated solution of carbonate of soda. Let us see what will happen. In thirty seconds, the image of the photometer will have shown up in the first dish, but the coating will be highly colored. In the second, the image will be complete and the coating light-colored. In the third, no image. It is only after twenty minutes that it will begin to appear.

It results from what proceeds:

1. That the sulphite when pure and neutral is an energetic retarding agent.

2. That it is necessary to determine and only place the quantity strictly necessary to prevent the coloration of the bath during the time that the development lasts.

3. That the alkali should not be added beforehand, because coloration commences from the time of its contact with the pyrogallic acid.

Here is a rational method of development which I recommend; I say method, as my formula is not absolute. Potash may be used instead of soda, or added to it, or an equivalent quantity of a sulphite, other than that I indicate, may be used. There are some brands of plates with which the sulphite of ammonia cannot be used.

Formulæ.

No. 1.

Pyrogallic Acid	10 grammes (154 grains).
Distilled Water containing	10 grammes (154 grains).
Sulphite of Ammonia, pure and neutral	150 c.c. (5 fl. oz.)

No. 2.

Saturated solution of pure Carbonate of Soda in Distilled Water.

For a plate 14 x 18 centimetres (5 x 7 inches) take:

No. 1	3 c.c. (48 minims).
Water	100 c.c. (3 fl. oz. 3 drachms).

Plunge the plate in bath No. 1, and progressively add a sufficient quantity of No. 2 for the image to appear. If the cliché be overexposed, a small quantity will be sufficient; if, on the contrary, there has been underexposure, a greater quantity will be necessary. The final result will always be the same: a good cliché more or less strong according as the development has been more or less prolonged. The strength of this developer is so great that with the slowest plates I made, last month, almost without light, excellent instantaneous prints, of the merits of which you will be able to judge when they will be thrown upon the screen.—*Progrès Photographique.*

Flash-light photographers are referred to page 4 of the cover of our magazine.

[*Translated for The Philadelphia Photographer.*]

THE HYDROQUINONE FORMULA CORRECTED.*

BY G. BALAGNY.

SINCE we commenced our experiments with hydroquinone, we have worked daily with this new developer, in order to discover the modifications to be made in it according to the nature of the work, either on account of the temperature, or of the light. It is especially this last agent that forces us, if not to change the formula recently given, at least to render it less energetic. When we made our first communication concerning this new product, we said:

"For instantaneous clichés it is always necessary to use a new bath. This is true at the present time, the month of April, as we believe that when the sun shows itself, the formula we have given will be very energetic, etc."

We were right in making this reservation as early as the month of May. We have now reached the bright days of summer, and the photographic conditions changing, we must change the developer. To begin, we think that we are justified in saying that we were right in giving great praise to the developing power of hydroquinone, and it is in these bright days that it is manifest. The image shows itself with considerable rapidity, all the details appear, so to speak, at the same time, and the cliché is gray and dull. It must be understood that we here allude to an instantaneous cliché made with the stops ordinarily furnished by the manufacturers, and, besides, we admit that the ordinary hydroquinone bath has been used, the formula of which we here repeat:

Twenty-five per cent. Warm Solution of Sulphate of Soda	300 c. c.
Hydroquinone in Powder .	10 grms.
Thoroughly dissolve and add:	
Twenty-five per cent. Cold Solution of Carbonate of Soda	600 c. c.

* Read at the meeting of the French Photographic Society.

We repeat, this bath possesses considerable energy, and consequently works well with stops that are really rapid, such as those of Messrs. Thury and Amez, instead of the metallic stops to which supplementary springs are attached. But with the ordinary rapidity given by the stops usually found in the trade (from the twentieth to the sixtieth of a second), there is really too long an exposure for the strength of the bath. The image rapidly develops itself, much too rapidly, and appears to fog. That accident has happened to us. We thought that our bath contained an impurity and we naturally sought the cause. We then examined, with care, several instantaneous clichés which had been exposed the usual length of time, presenting this so-called fogged appearance, and we had no difficulty in discovering that there was no such fog, but simply an image that had too rapidly come, the whites reduced to the equality of the blacks, thus producing gray clichés. The remedy was not far to seek. Note that we refer here only to instantaneous clichés, that is to say, clichés which, notwithstanding a very short exposure to light, became gray in the hydroquinone developer. This is hardly to be believed. But we were soon consoled, inasmuch as the image, although gray, had everywhere showed itself, and as well as if a time exposure had been given. What was wanting to make these clichés good? Simply to cause this gray, which is an excess of softness, to disappear to make room for a certain degree of intensity. It was necessary to intensify the blacks and restrain the whites. Now the way to reach this result, we already have it in our process without making any change in the original formula. It suffices to *add to the new bath* used for developing instantaneous prints, a certain quantity of an old bath, since we already know that the old hydroquinone bath possesses the important property of moderating a development which proceeds too quickly. We would use preferably an old bath which has already served to develop some instantaneous clichés, or some clichés that have had rapid exposures, a bath which is too old, and consequently too red, should only be used for clichés that have had long ex-

posures, or for transparencies, etc. Let us take, therefore, a bath that has been already used to develop about a dozen clichés, so that its strength has lowered. To 100 cubic centimetres of our ordinary new bath we add, as the case may be, from 25 to 50 cubic centimetres of the old bath of which we have just spoken. We will then have a developer acting gradually, preserving marvellously well the whites of the instantaneous cliché, whilst the blacks and the half-tones will rise to the desired intensity. Naturally we should be guided in adding the new bath, by the light at the time at which the cliché was made, the quickness of the stop used, etc.

Let us give an example: With a stop acting in from a sixtieth to a hundredth of a second, and the pure light of certain spring days, it is possible to develop with ease an instantaneous cliché with a hundred cubic centimetres of a new bath, to which half of its volume of a bath which has already been used has been added. Here is an indication; it is for the operator to supply the rest. Let him bear in mind, however, that even for instantaneous clichés and in the bright light existing at this time of the year, in using ordinary stops, we should never develop with the new hydroquinone bath, it should be mixed with the old bath. Doubtless, instantaneity is very interesting, it is even absolutely necessary in many cases. But whenever time exposure is possible, let it be done; it is the only way to obtain clichés carefully studied, and complete. With time clichés, what we said in the month of January about hydroquinone development remains strictly true. Use the old bath, always the old bath, which may be revived with a small quantity of new bath to prevent hardness; an old bath, which has become red, used alone, will give hardness if the exposure has not been sufficient. Revive the same bath with about from twenty-five to thirty per cent. of its volume of new bath, and you will have an excellent developer for time landscapes, interiors, etc., in fact for everything that has required a prolonged exposure. If you have to develop groups, portraits, or any kind of clichés to which we generally give an exposure of a few seconds, then you should avoid using your oldest bath; you would obtain a hard result, even with the addition of twenty-five to thirty per cent. of new bath. In that case you will take an intermediate bath, a bath, for example, that has been used to develop, yesterday or some days before, instantaneous clichés, and you will add to it twenty-five per cent. of new bath. In a word, the bath should be governed by the exposure. For a prolonged exposure, a rather old bath, with a little new to prevent hardness. For a short exposure, a bath that has already been used, which cannot really be called old, and to which a little new has been added to give softness. All this is not very difficult of execution: we have simply to recollect that the bath should not be used alone save in the exceptional case of very rapid exposures, or in winter, or in the case of an insufficiency of exposure or of light. Except in these rather rare cases, it is well to combine the old and the new baths, using more of the new bath for instantaneous prints, and more of the old bath for time clichés. But, you may say, and that in my opinion is the last objection that can be made against hydroquinone, What will you do if you have no old bath? My answer is ready—you will at once make, artificially, a new bath old.

For this operation water and crystallizable acetic acid will give us their aid. Example: we have a cliché which has been exposed three seconds, or a portrait, or a group, etc. We will take one hundred cubic centimetres of the new bath, to which from fifty to one hundred cubic centimetres of water have been added, say the new bath alone, but we will add about ten drops of crystallizable acetic acid for one hundred cubic centimetres of the liquid. A slight reaction will be produced in the bath, which will then contain a little acetate of soda, and losing just enough of its strength to produce a development sufficiently rapid, giving in every case a splendid intensity, whilst at the same time a transparence of the blacks is preserved, thus avoiding all hardness. The bath, to which water and acetic acid have been added, is particularly soft but slower. It is possible with this formula to develop all kinds of clichés. They resemble astonishingly the old clichés made with wet collo-

dion. These acetic-acid baths may be preserved exactly in the same way as the others, and they may be put to all uses. We must bear in mind that with the formula given above we have an old bath at once ready for use, and which is to be mixed with the new bath for instantaneous clichés; for example, from sixty to seventy-five parts of the new bath for about from thirty to forty parts of the bath prepared as above. We are speaking here of instantaneous clichés of medium rapidity (one-sixtieth of a second) and of very fine weather; for very great rapidity, which is rare, always use the pure bath. We think that we have thus supplied what was wanting in the process. We have made a great number of clichés in order to ascertain the efficacy of these different formulæ, and we may say that our experiments have always been crowned with success. In our opinion, when we have a bath that has already been used, we have, as the English say, the ideal restrainer, which takes the place of bromide in the other developers. Now, as this restrainer is nothing more than the bath itself, we are justified in saying that we have with hydroquinone an automatic bath at our disposal, always ready to be put to all uses, and losing its properties but slowly. The bath with time reddens more and more, which helps to ascertain its age. It is thus possible to say at once, with a little practice, which of two baths is the one that has seen the most use. The one that has been used only to develop a series of six clichés, for example, should be slightly yellow. Place it in a rinsed bottle, and on the morrow, mixed according to the indications given above with some new bath, it will develop time clichés or instantanieties. Always use glass dishes; never use paper or wooden dishes with glass bottoms, as in making these last varnishes are used which dissolve in the bath, and end by causing a black deposit.

Finally, as we have said at one of our last meetings, dissolve the hydroquinone in the warm sulphite; let the solution be complete before adding the carbonate, and the liquid will remain white. As to the sulphite, do not reduce the quantity, or but slightly. In our formula it is seven per cent., you may use five per cent. But we believe that there is a limit beyond which discoloration occurs at the time when the carbonate is added. If you persist in reducing the quantity of sulphite, gradually diminish the proportion of carbonate if you wish to avoid discoloration. It is easy to be convinced of what I say. Fill one-third of a test-tube with carbonate, and dissolve a pinch of hydroquinone, the liquid will at once redden, and you will see how much sulphite it is necessary to add to make it become white again. A strong bath should therefore contain a great deal of carbonate, and consequently a great deal of sulphide. Let me say a few words now, before ending, concerning the powder which is formed in the washing waters. It is not injurious, but it should be made to disappear. After development, thoroughly rinse your cliché to remove any excess of carbonate, and fix in a hyposulphite bath at twenty per cent. Then remove into a dish of water the excess of hyposulphite and place your cliché for at least five minutes, the coated side uppermost, in an alum bath at six per cent. Powdered alum or white potash is the best to be used; be sure that your cliché is well covered with the liquid. Then withdraw your cliché and rinse in several waters as usual. In the first water a bluish precipitate will be found, which soon will be deposited on the cliché, and which will remain there notwithstanding the after washings. It can be removed by passing a badger brush over the surface; this will dislodge the accumulated powder, and a final rinsing will cause its entire removal. If you use glass plates, dry over the drainer. Should flexible plates be used, you can pass them, three minutes after having been placed between sheets of bibulous paper to remove the excess of water, into the following bath:

Alcohol . . .	1000	cubic centm.
Glycerine . .	100	" "

Coming from this bath, which should always be sufficiently strong in alcohol, spread the flexible plates on a glass plate by means of a gelatine roller, and dry them separately between sheets of thick bibulous paper. Do not omit changing from time to time the place of each of your clichés in these blotters, so as to avoid their remaining

too long a time between their damp sheets. Have several blotters, and go alternately from one to the other. If the plates have been well alumned it is not necessary, with our flexible plates such as are now made, to place them in pure glycerinated alcohol. For the last washing, let them soak in water containing a little alcohol and glycerine; for example:

Water . . .	1 litre.
Alcohol . . .	50 cubic centm.
Glycerine . . .	40 " "

At the end of two hours withdraw them, and dry by placing two of them *back to back* and sticking them with two pins to a strip of wood. In this manner we obtain clichés that are very plane and marvellously supple. When the two clichés are separated it will be seen that a small quantity of liquid has remained imprisoned between them. This has no effect on their desiccation, inasmuch as our flexible plates are absolutely impervious. However, this feeble excess of liquid had better be removed with a fine handkerchief. The clichés should be kept in a thick blotter.

Such are the modifications made in all these processes and which I am happy to communicate to my colleagues of the French Photographic Society.—*Moniteur.*

To Reduce a Negative.—Here is a formula which has enabled me to save some instantaneous clichés, considered as absolutely lost, after a development, made during an excursion, literally in the dark.

Perchloride of Iron (the pharmaceutical preparation)	10 c.c.
River Water (not distilled) .	100 c.c.

First wet the cliché in *clean water*, and plunge it quickly into the solution. The cliché changes gradually, and it is easy to follow the clearing. Just before reaching the desired point wash in abundant water, as all the free perchloride should be eliminated. Place, for one or two minutes, in a hypo bath at fifteen per cent. The cliché should arrive at the desired point and completely clean itself. Watch for blisters; should they appear, have recourse to the alum bath, without previous washing, but followed by a thorough washing.—P. Berenguier, in *L'Amateur Photographe.*

Editor's Table.

New Societies.—The "Paris Photographic Club" at Paris, France, and "The Association of Amateurs of Photography" in Rome, Italy.

The "Photographic Crank" of the *Detroit Free Press* is publishing a series of articles in that sprightly paper on "How to Photograph," and the "crank" turns out some really good information.

Mrs. W. H. H. Clark, of the *St. Louis Practical Photographer,* was presented with a silver horse-shoe at one of the sessions of the late photographers' convention in Canada. It is not often that the editors of photographic magazines are treated so considerately. Therefore we congratulate our fair contemporary.

Anthony's Universal Roll-holder is very ingenious, compact, and complete. A free explanatory circular may be had by all.

Photo-engravers are Increasing and Succeeding.—Mr. A. E. Caldwell, of Toronto, writes:

"I have made good progress by following to the letter your edition of Mr. Wilkinson's work on photo-engraving, etching, etc. Send Mr. Burton's *Guide* also."

A very pretty bromide cabinet, as rich as an ammonio-nitrate print, and "developed just like a negative," has been sent us by Dr. J. C. Parker, Grand Rapids, Mich.

Bordeau's French Retouching Solution, made by Messrs. Wilson-Hood-Cheney Co., Philadelphia, is a very helpful compound.

Messrs. S. L. Stein, of Milwaukee, and M. J. Steffins, of Chicago, called upon us recently. They were "off on an outing."

A damaging fire occurred at the studio of our friend Mr. A. McDonald, South Bend, Ind., on August 30th, but, we are glad to hear, without any delay in the business of the enterprising proprietor. "He is at it again larger than ever," we are told.

A pretty pocket catalogue, illustrated, comes to us from Mr. C. C. Vevers, the famed dealer in photographic materials at Horsforth, Leeds, England. Any of our readers having commissions abroad can safely entrust them to Mr. Vevers. He is a good photographer also.

Mr. John W. Buehler, an amateur friend, of Chicago has favored us with some excellent interior and exterior views of 11 x 14 size. He seems to be master of the quantities of exposure and development and to get them just right. His view of a house with the broken shadows of a lonely tree and the dots of light peeping through, all projected upon the gable end of a house, is the gem of the lot.

Mr. G. S. North, South Norwalk, Conn., has favored us with some fine 5 x 8 prints from his last March blizzard negatives. They were properly timed and are therefore successful. One of the first trains which came in from New York after the storm, with two locomotives burdened with snow up to their shoulders and over their heads and in their eyes and everywhere, is very effective. All are very fine. In one there are fifty snow-shovellers all at work.

Hereafter the M. A. Seed Dry-plate Co. will turn out plates of the following sensitometers only. Sizes from 3¼ x 4¼ to 8 x 10 inclusive, Nos. 22, 23, and 26; from 10 x 12 to 14 x 17 inclusive, Nos. 23 and 26. Larger sizes, 26 only. Please note above, and order to correspond. August 4, 1888.

"Mr. Whistler's Ten O'Clock."—This is the title of a lecture on art delivered several times in London by Mr. J. A. W. Whistler, which has just been published by Messrs. Houghton, Mifflin & Co., Boston, in brochure form at fifty cents. It is a lovely bit of composition and will be enjoyed by all who have artistic sense sufficient to feel its charm. Who has not? Mr. Whistler says art never had any age or "period." Her secrets have always been unfolded to her lover, for he always "sees in her choice selection of brilliant tones and delicate tints, suggestions of future harmonies. . . . Where he is, there she appears, and remains with him, loving and fruitful." Pray get in with her.

A Valuable Address.—Before the regular meeting of the Photographic Section of the American Institute, New York, held on Wednesday afternoon, September 4th, Dr. J. J. Higgins delivered the address of the evening upon "A New Magnesium Lamp for Use in Photography." It will appear in full in our next number. It is the most valuable and instructive contribution yet made to magnesium-flash literature and will meet with a world-wide welcome.

Mr. J. N. Cook, one of our old-time subscribers at Santa Barbara, Cal., has favored us with a rich and curious collection of his photographs of fruit, flowers, old mission churches, fields of waving pampas grass, rose groves with trees as high as houses, and natural and curious views. A batch of his best portrait work completes a choice lot.

Mr. W. B. Flower, Petoskey, Mich., again has our thanks for a series of excellent portraits of Indians. Mr. Flower was recently honored by an order for a life-size bromide enlargement from the Smithsonian Institution, from his negative of "Mother Smoke," an old Indian squaw well known in Petoskey.

Mr. M. M. Mudge, Valparaisso, Ind., uses not only the best technical skill, but æsthetic genius in the finish of his pictures. By masks, mats, and various accessory "dodges" he secures some effective things. His pictures of children are admirably caught. His bunch of grapes is a fit study in light and shade for any one.

Mr. Will H. Foote, Flint, Mich., delights us with a number of admirable examples of his work, very carefully posed and lighted. He is a master of development, too, for nothing could be more perfect than the gradation of light and shade he secures. We congratulate him.

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WHAT PEOPLE SAY OF THE INTERNATIONAL ANNUAL.

AN immense number of topics are discussed, and the whole field of the rapidly developing photographic art is admirably covered.—*Brooklyn Times.*

It is a valuable addition to our literature; a mine of facts. You deserve gold credit. I have only partially gone through it yet, but I bring up something at every turn.
S. R. STODDARD, Glens Falls.

It far exceeds any expectations I had formed of it, and I really feel quite surprised at noting the list of distinguished contributors.
GEORGE VAUX, JR., Philadelphia.

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It is gotten up in fine form, and very many of the contributors tell me things which I am glad to know. Every purchaser of this volume will get many times their money's worth if they are of the progressive sort.
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I have read many of the articles and consider the editors have made a book suited to all tastes. The shape of the volume is more convenient than the usual form of annuals. Thank you for so much pleasure.
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EDWARD L. WILSON, the well-known and popular Photo-Book Publisher, of No. 853 Broadway, New York, has just issued a very valuable and important work on Photo-engraving, Photo-etching, and Photo-lithography. The publisher and author claims the book treats "mainly upon an entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them." It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Mr. Wilson's own contributions and translations from the French and German, make the new book very thorough and practical, and also make the whole of the processes very plain. The book is 6¼ x 8¼ inches, illustrated, 180 pages, and cloth bound; price $3, post paid, and is divided into the following departments:

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed.

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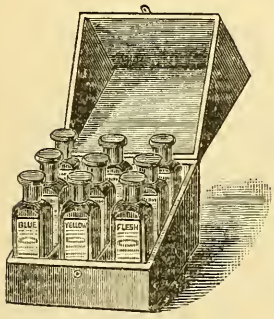
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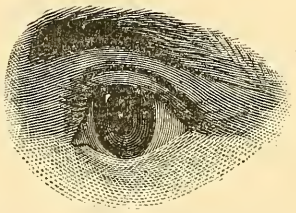
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A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better.—DEAN WRIGHT, in the April *Boston Academy*.

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It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

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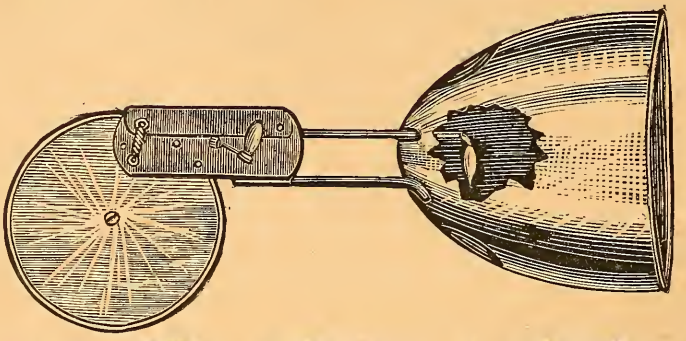
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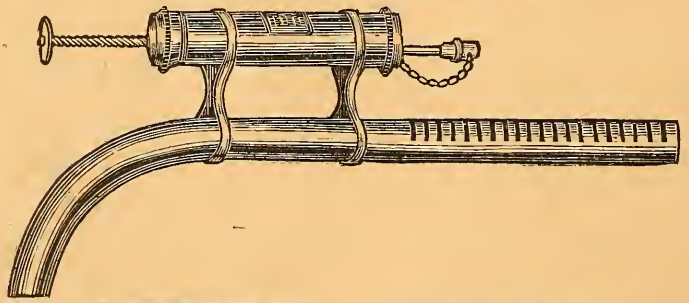
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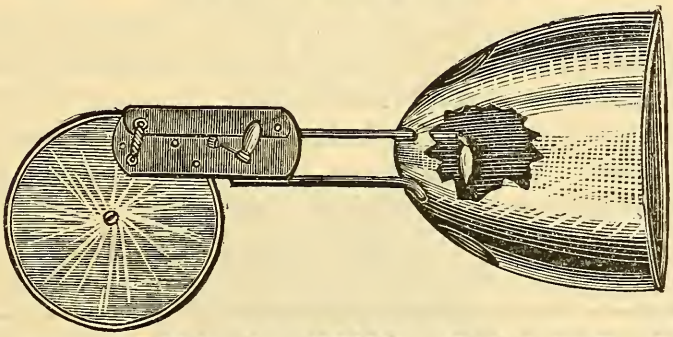
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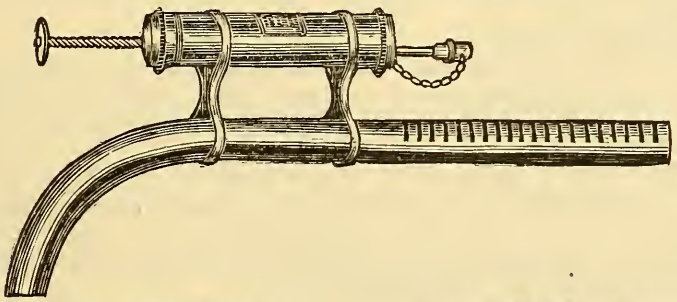


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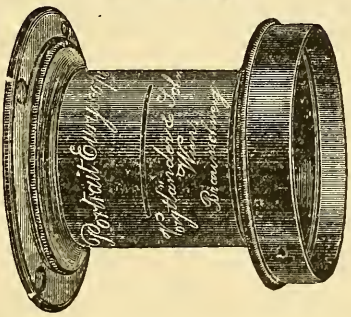
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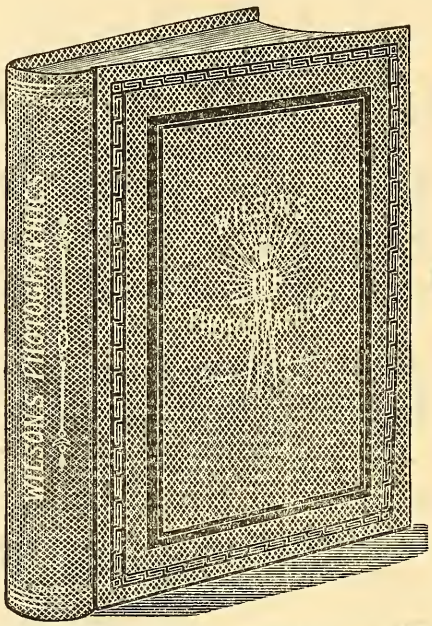
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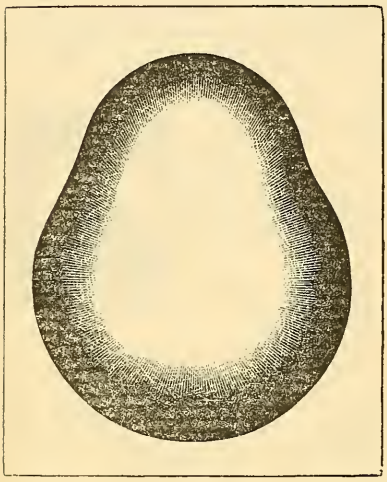
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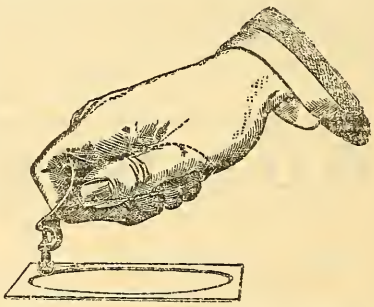
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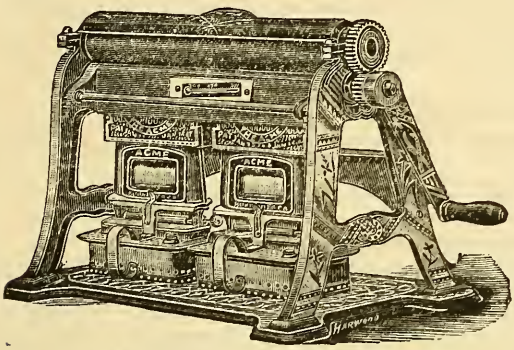
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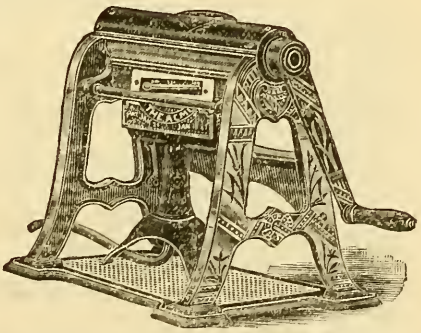
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THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. OCTOBER 6, 1888. No. 331.

ON THE MAGNESIUM LIGHT IN PHOTOGRAPHY.*

BY J. J. HIGGINS, A.M., M.D.

THE transmission of magnesium through flame for ignition is by no means new, for what is there, indeed, as the adage goes, "new under the sun?" Its practical application, however, is dependent upon divers and suitable details of construction of apparatus, upon many experiments and tedious tentative trials therefor, and such thought and invention, as may be, necessary for the production of the end in view. As an outcome of such factors, I exhibit to you a lamp, not only achieving the desired result, but even still more. Of magnesium, *per se*, I have but little to say. All now are aware of its use as a photogenic agent; that it is the lightest of all metals, and, although not a *propter hoc*, that it is, *par excellence*, the light-giving metal.

God, in his omniscence, has decreed to all nature periods of activity and rest—the day is succeeded by the night—the summer by the winter—the tides have their diurnal high and low water; but *man* in the nineteenth century, with its wonders of progress and advance, seems determined to ignore even the semblance of repose, and would have the tides of business, science, and invention ever on the flow. And our art, swinging boldly from the shore into the very centre of the swiftly flowing stream, has shown by *its* advance that the disciples of Daguerre are not of those who are left behind. Until of late the camera had *its* periods of rest. Science had enabled man, gathering the light rays with photographic lens, to pencil with Nature's own pen her ever varying scenes of loveliness and beauty upon leaves of precious metal.

But for these inimitable transcripts, *light* in both quantity and quality was needed. With the summer solstice passed and the autumnal days upon us, we soon found that Nature, chary of her charms, threw a screen o'er all, mantling with snow and icy sleet both field and forest, and with the inclemency of cold and storm, we were forced to give the camera its rest; a partial rest, 'tis true; for who is there among us, who then culling from his stored-up treasures his finest, sharpest negatives, did not hang the positives resultant, crystal offerings, in his windows, to the light that limned them?

Soon, however, with the vernal sun smilingly inviting, it was again seen dotting everywhere the valley and the hillside. But *now*, with heaven and earth both conspiring, its rest has past; and ever, be it night or day, with the brightest noontide light, or the darkest midnight gloom, it is our slave, and, *nolens volens*, ready for its work. The word "Photograph" will no longer stand solitary and alone upon the sign-boards, but be associated in loving union with "Magnesiumgraph," its new and virgin bride.

* An address delivered before the Photographic Section of the American Institute, September 4, 1888, and repeated, by request, before the New York Society of Amateur Photographers, September 21, 1888.

The usual, and one might say almost universal, mode of the use of magnesium, is that in which, combined with other agents, it is exploded in what is known as flash-powder or tablets or cartridges. Great care is necessary in their use, safety requiring an attached fuse for ignition by a torch of considerable length, and that the operator says at once "good-bye" to the prolongation of his near acquaintance.

In their use, again, it is impossible to give an exposure at the given or desired moment, by reason of the lapse of time unavoidably attendant upon bringing the torch to bear upon the fuse and lighting it, and the then subsequent explosion of the flash-powder. In portraiture, for instance, not only can a desired expression not be caught, but movement may have taken place.

With moving objects, whether animate or inanimate, the same objection is fatal to their use. This was well exemplified in an attempt to obtain some negatives of the chimpanzee in Central Park, "Mr. Crowley," recently deceased, *requiescat in pace.* With considerable expense and trouble some photographers brought there a couple of large-sized cameras, and with great care (for their plates were large, and something unusually fine and grand was aimed at) focussed the same upon the gentleman from foreign climes. For certainty of result, they had provided themselves with some flash-powder, and when ready the exposure was made. Mr. Crowley, however, was *non est*, that is, "he wasn't there."

Now the education of Mr. Crowley, under the tutorship of the exceedingly gentlemanly and courteous superintendent, Mr. Concklin, had been brought to a high state of perfection, and it was claimed that he understood the whole business, and remained quiet enough for the gentlemen to get their proper focus, etc., and then simply fooled them by stepping one side at the critical moment; in a word—that he knew more than the photographers. My opinion, however, is different, and I opine that he was a perfect ignoramus, but, that when he saw the match struck to light the fuse, and noticed the little fiery scintillations creeping up to the powder, he thought it was time to skip. The question is, of course, an open one—the explosion most certainly was, for Mr. Crowley was not in the field—and no amount of entreaty or cajolement could bring him out from his little corner in which he had ensconced himself. With the lamp that I show you, as you will see further on, there would have been success. and the legend on the prints could have been *veni, vidi, vici.* As to the danger attendant upon these flash-powders, it is well known, it is not chimerical or imaginary, and any representations to the contrary are reprehensible. Serious accidents have occurred with them, even to the loss of life. They are uot permitted through the mails. In the lamp here shown no compound of magnesium is employed—magnesium only, magnesium pure and undefiled — magnesium which is not only not explosive but with difficulty inflammable in ordinary flame.

Another serious objections to these compounds is the fearful volume of smoke following their use, which, aside from its injurious and irritating action upon the eyes and throat and chest, renders succeeding exposures impossible. I think you will be surprised at how beautifully this nuisance is, for the most part, got rid of; the combustion of the magnesium being so perfect, that there is but very little smoke, and that of a thin and entirely different character from the heavy clouds settling down like a fog, and necessitating the instant opening of doors and windows, for, as you well know, its very slow removal. With the lamp before you, I have made as many as a dozen exposures of an evening; the smoke here never being a source of hindrance. I exhibit to you a couple of interiors so made, the one succeeding the other, in my own house. The small amount of magnesium used for each negative will astonish you. An operator highly skilled, and in constant practice with magnesium, was present, and I asked him what amount of compound he would use. His reply was 200 grains. I said I would only use 15 to 20 grains. The negatives were all that could be desired, as the prints show. No such negatives could be obtained by daylight. Examine closely and you will agree with the many critics and judges who have seen them, that they are beyond all question of the very highest

order. They are the same as were exhibited by Mr. Rockwood, of New York, at the Minneapolis Convention; as, indeed, are the lamps which I have here, I having loaned them to Mr. Norman White, of 96 Maiden Lane, New York (to whom I had given permission for the manufacture of some) for such purpose.

The plates that I find exceedingly well adapted to this use, as, in fact, to all uses, are the well-known Seed plate No. 26. Others will, of course, answer. Of these I speak from a very thorough experience. They yield a negative chock full of detail; the edges or borders are clean and transparent, never striking in and fogging a plate from previous action induced by the interposed separators. As development proceeds it becomes more and more like our *beau ideal*, and we offer thanks that the problem of plates is solved. *Experto crede.* The lens should be first class, giving definition to margin on full opening, and that a large one. They exist, but are not easily found. Mr. William T. Gregg, of 25 John Street, New York, has recently, in the journals, called attention to the fact that our lenses, as now made, are corrected for white light, and that a different correction is needed for magnesium. I find that he is right, and am now engaged in coöperating with him in the necessary trials for the bringing out of a lens specially adapted to magnesium exposure. If successful, their selection would, of course, be advantageous. As to reflectors, seldom needed, yet ofttimes useful, the best is a white sheet suspended behind a lamp. It is unequalled. Of the very many purposes for which the lamp is serviceable, it is hardly necessary to speak. As the sole agent, or as an adjunct (the daylight being insufficient, and the lamp used as an aid) in gallery work—for interiors a necessity — the social circle, the dinner party, the waltz with its rapid movements, or the more quiet cotillion; the loved little ones, or, if they are wanting, the pet dog or cat, or the monkey and the parrot (of the latter a print); the dense shade of either nook or shrubbery, ofttimes so invitingly presenting itself; the camping party in the Adirondacs or other woods, with the trees shutting out the light; all, and many, many more cases, too numerous to mention, are at our command. We are, indeed, disciples of the Sun; it is the god we worship, but magnesium is our queen.

And now in the way of demonstration. By (most simple means, as you see) the mere compression of a bulb dilating an interposed or storage bulb, power is obtained to any desired extent for the ejection of the powdered metal through the flame. The receptacle is of greater capacity than ordinarily necessary. It may be more or less filled, *pro re nata.* Ten to twenty grains are introduced. The flame is large, some two inches in diameter, and say a foot or more in height. You will note that its character is at once changed, by the superposition of a device termed an "erector," into one intensely blue, solid, and columnar like. Through the centre, by a touch of the finger upon this attached key, at any desired instant, the charge is driven and the exposure made (exhibit); and, as you have noticed, without noise, detonation, or explosion; silently, and in conformity with the saying "that still water runs deep," effectively. The clouds of smoke, for riddance from which you so regularly hasten to open the windows, you do not see; the combustion has been perfect, and no veil is settling down upon you, for it is comparatively and practically smokeless. Instantaneous, or more prolonged exposure, or repetitions thereof, are at one's pleasure; the same being effected by and dependent merely upon the handling of the bulbs (exhibits).

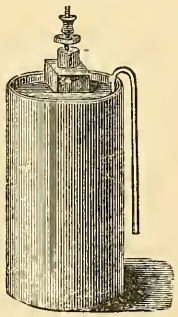
Again by the interposition of a "T," or many-wayed piece, two or more lamps can be simultaneously discharged, giving an illumination beyond all precedent—an illumination which must be seen to be appreciated (exhibited).

For many purposes the one or terminal bulb may be sufficient; its compression, however, ejects but a very small amount of magnesium, and that slowly. It is in the use of *the two bulbs* that the full power of the lamp is at one's disposal.

Aside from photographic use, its utility for signal purposes in the naval or merchant service is apparent. By means of this faucet interposed, liberating at will the power instantly or slowly, we have at once

the Morse alphabet of dots and dashes. The marine in a moment is at the mast-head, with no *impedimenta*, and a light, not a point, as with the electric, but of large size and volume, is flashed out at command, the only addition necessary being that of suitable protection against wind and storm. If the code requires colored as well as white light, the admixture of, *e. g.*, strontium nitrate will give the red, and so on.

In addition to the lamp, which I have had the pleasure of exhibiting to you this evening, I would furthermore call your attention to an article of recent invention (foreign) which supplies a want hitherto unmet, viz., a battery or cell in which no liquid is used—a *dry* battery with neither acid nor water, complete in itself—a dry battery working in every way equal, to say the least, to the liquid one of similar elements, and lasting likewise as long—for years. It is known as the "Gassner Dry Battery," A. Schoverling, 111 Chambers St., agent. The usual cell is a cylinder three inches in diameter and seven inches high. That which I



would more especially present to your notice is the petite cell No. 0 (exhibit) capable of being carried in your vest pocket the same (and with the like convenience) as you would your watch. This cell instantly rings an ordinary call or signal bell (exhibit). I insert two hundred feet of covered annunciator wire (twice the height of an ordinary house). The interposed resistance does not hinder its ringing (exhibit). I have brought with me from my laboratory a standard resistance coil of 100 ohms. On connecting three of these No. 0 cells for intensity, and inserting such resistance coil, you readily see its action upon a galvanometer needle to the extent of ten degrees, and moreover the needle permanently held there on continuation of contact (exhibit). With another galvanometer of different construction, the needle is instantly swung completely around the circle (exhibit.

As all present may not be conversant with the details of telegraphy, I would say that the resistance of this 100-ohm coil is equal to 25,000 feet (about $4\frac{1}{3}$ miles) of No. 16 annunciator wire, and that at such distance like effect upon the needle would take place. Its effect upon a magnetic bell when so connected, and with a short or house circuit, is violent (exhibit).

With two cells connected for intensity, and a 20-ohm resistance coil introduced a bell is rung with force. The resistance here is equal to 5000 feet, nearly a mile, of No. 16 annunciator wire. The value of such a battery in our science is great. An electric instead of a pneumatic release to the shutter is ofttimes desirable, as for instance, when the camera is stationed at a distance from the operator. In my own residence, overlooking the East River and Blackwell's Island, a camera armed with its dry plate is usually ever ready for service in one of the widows of the uppermost floor. From any part of my house by an electric tap I am enabled (or, if absent, a member of my family) to operate the shutter with consequent exposure on sail or steamer, or other interesting object passing. For the simultaneous release of several cameras I also use it; nothing of course equals it. To enumerate cases of applicability is unnecessary. In public lantern exhibitions the signal bell so greatly needed is now ready and conveniently at the operator's or lecturer's disposal. In your galleries a couple (or even one battery) with call bell and wire at a cost of only from three to five dollars will enable you to hold communication with any part thereof. The battery is unaffected by either cold (*it does not freeze*) or heat, the necessary moisture being in chemical combination and not in the form of fluid. No deposit on zinc increases the internal resistance, decreasing its power. When not in use there is no action, and there are neither

fumes nor uncleanliness from crystallization of salts on its exterior; nor are there again ang glass jars to be broken—a hermetically sealed metallic case, inclosed in a paper box, constitutes the battery.

THE POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

Review of the Faults in the Positive Process upon Albumen Paper.

(Continued from page 558.)

Mistakes in Raw Paper.—The photographic raw paper must, as is known, be of a very particular quality. It must be faultlessly white, free from dirt particles, from metal or wood splinters, and from all mineral filings, and must consist only of pure rag materials. In looking through it, it should be neither cloudy nor streaky, nor should it show any black dots. Finally, it must possess a good rosin sizing, and be of extremely fine and even texture.

There are only a few makers who busy themselves with the production of this paper, and these have in the course of years greatly improved and perfected the quality of their manufactures. In relation to this superior quality, the price is high owing to the scarcity of fine rags absolutely necessary for this paper. Cloudy and streaky raw paper should come only in second choice. Such paper should not be accepted as prime. Iron spots, on the contrary, sometimes appear in the first choice, since they cannot be noticed before the salting. There is no remedy for these when they do occur, but they are found but seldom. In very dark pictures, with much strong detail, this fault is least annoying; but these black points are very disagreeable in open subjects.

Faults in the Albumen Film.—These are owing to the quality of the albumen and to the faulty albumenizing. Concerning the quality of the albumen, the photographer can do nothing, as the causes vary. There are more faults which spring out of the quality of the albumen:

1. *Excessive salting*, which the photographer should avoid, since the unnecessary consumption of silver is bad in an economic light.

2. *Too much acid*, which makes the silver bath acid quickly and renders the toning difficult.

3. *Too great fermentation*, happening especially in summer, causing the browning of the silver-bath and making the toning difficult.

4. *Too old, brittle albumen*, which has an inclination to blister in the washing after fixing, and to crack and flaw in the pasting. The age of the albumen paper, if the original quality was good, cannot materially injure the albumen layer if pains are taken to follow out the hints given on the treatment of the paper before silvering, but the paper itself becomes somewhat yellow with time, and though this yellowness disappears in great part in the salting, the whites are not so brilliant as in paper that has not become yellow. Also, the albumen sheet colored with aniline color loses in brilliancy, but this proves to be scarcely prejudicial in the further work. Direct harm can be done only by very yellow paper.

Faults of preparation should only occur in second-choice paper. Such are *blistering*, *creasing*, and *streaking*, the latter, either edge streaking with only a layer of albumen, or comet-like or straight-lined streaks, which are gradually lost and have in the middle a thin place. All these faults give overtoning in the places where the albumen sheet is thinner, thus blue spots, and on the edges where the albumen is thicker, under toning and reddish, puffy places. If such places fall in the white edge of a scattered picture, they are often not noticed at all. As a rule, such faulty places must be avoided in the trimming.

Uneven thickness of the albumen should not occur in the double-albumenized paper, and just as little uneven coloring. The latter is of little consequence in the practical result, because the greater part of the coloring disappears in the salting. In single-albumenized paper, on the contrary, the difference in thickness and color of the albumen sheet must necessarily be so considerable that it is not only noticeable in the strength and depth of the picture, but also in the uneven gloss and the toning.

Faults in the Silvering. — *Air-blisters*, which arise from a too rapid or careless laying of the paper on the silver-bath—and the dryer the paper brought to be silvered, the easier their formation—can easily be removed by laying on again. Small air-bubbles, which do not go away of themselves, must be picked out with some paper or with the glass measure, but not scratched.

The paper rolls itself back soon after the laying in and the back is moistened with the silver-bath. This proceeds from too great dryness of the paper. Of necessity the sheet must be bent up previously, particularly in the corners and along the edges. A thorough dampening beforehand is better.

Gray tarnish and marbling, which often show on the first sheet, proceed from dusty air or a dusty bath-tray. The silver-bath must be skimmed or filtered with a broad strip of blotting-paper. This fault also occurs when the silver-bath has stood long in the cup. *The silver-bath is colored brown* if the albumen is not pure, or, in consequence of too great fermentation, soluble organic substances have passed over into the silver-bath. Such a silver-bath must be regenerated. A pure albumen should not color a neutral silver-bath brown. *The albumen dissolves and forms a precipitate in the silver-bath.* The bath is too weak and must be strengthened. Long floating upon a weak, warm bath can easily cause dissolving of the albumen.

*Faults in the Hanging up and Drying of the Paper.—The silver solution does not run off smooth and uniform, and lets drops appear on the paper.**

*The paper rolls up in the drying.**

*The paper is unevenly dried.**

The paper shows black silver specks, which extend themselves in the form of stars. This comes from iron splinters, which are in the raw paper, but can also be caused by dust containing metal. In the former case they are visible upon the back, in the latter, not.

The paper has obtained silver-bath spots upon the back, and shows blue spots going through. No help possible.

Faults in the Printing. The picture appears faint, without strength, without depth, and without whites.

1. From too faint a negative. Print in as weak a light as possible, also very slowly, thereby the lights will remain whiter, but the shades stronger and deeper. Cover over the negative or the printing-frame with tissue paper.

2. From acid, old silver-bath. It should be regenerated and strengthened.

3. From too weak drying or too moist pressing-pad.

Only the lights are dull, but the shades are strong; a consequence of too much light on the prints in the changing or examining, or not keeping in light-tight receptacles.

The paper becomes yellow. This occurs soonest with fresh albumen paper in summer, when the printing occupies too long a time in consequence of too thick negatives—particularly in such as are retouched with color.

The paper shows on the albumen side metallic shimmering lines, and on the same place on the back, black lines always in the direction of the length of the sheet. This springs from fibres in the albumen sheet.

The shades show metallic streaks, and print in consequence too faintly in inharmonious thick negatives. These should be printed in direct light.

The picture shows irregular dark spots, which are still more visible in the toning; if the silver-bath does not flow off evenly in the hanging up, and the silver drops left are not removed at the right time, or thoroughly enough by laying upon dry, clean blotting-paper.

The print is not sharp enough when the paper, in consequence of uneven or too strong drying is not laid evenly on the negative, or, in consequence of too great difference in temperature between paper and pressing-pad, it is drawn in an undulating way.

The picture is underprinted. No help.

Faults in the Washing Out.—Soda finger-marks and splashes cause yellow-brown spots.

Faults in the Toning.—The pictures do not tone, or are too long in toning. Cause can be:

1. Acid silver-bath. One should use weak alkaline gold-baths (it is self-evident

* See former chapters.

that one should neutralize the silver-bath); also to avoid:

2. Too strongly acid albumen.

3. Acid reaction of the gold-bath. One should examine with blue litmus paper and should neutralize with chloride of calcium.

4. Too little gold, as consequence of too little strengthening, or an adulteration of the gold salt.

5. Too strong washing in the use of the chloride of potash toning-bath.

6. Too cold toning bath. It should be warmed to 25° C.

The pictures tone too quickly, and are badly colored. The cause is too much gold. It should be diluted, or a few drops of very weak muriatic acid added.

The pictures tone unevenly. Cause can be:

1. Sticking together of the prints in the bath. It should be kept in motion and the prints laid in it one at a time.

2. Uneven washing out.

3. Uneven distribution of the gold in strengthening during the toning.

4. Hypo splashes.

The pictures have dulled lights if too bright daylight is used in the washing and toning.

The pictures have rusty brown spots and points. These might proceed from too long dampening of the paper.

Faults in the Fixing.—The pictures do not fix, or too slowly. The cause is that the fixing bath is too much weakened or too cold.

The pictures show spots, owing to splashing of hypo on pictures not yet immersed.

The pictures become foxy-red if they are toned too weak.

The pictures show dirty yellow or blue spots. Cause, sticking together of the prints in the fixing-bath.

Faults in the Washing.—Blisters take place.*

The pictures stick to the dish on the edge.

The pictures show yellow spots, which can be seen through, a short time after drying. Cause: insufficient washing. Test for hypo.*

Faults in the Finishing.—Spots can arise on the copies:

1. By lying on one another too long while wet.

2. Insufficient washing, leaving fixing soda present.

3. By acid, spoiled paste.

4. By mounts containing fixing-soda or chlorides.

5. By the gathering of dust or fixing-soda in the blotting-paper and absorbent pasteboard too long in use.

* See former chapters.

PHOTO-ENGRAVING PROCESSES.

The "Wash-out" Process.

This popular method for making high relief plates is based upon the well-known property of bichromatized gelatine, to become insoluble under the influence of light. When films prepared with this substance are exposed to light under a photographic negative, and then immersed in cold water, only those parts not acted upon by the light will absorb water and swell. Hot water washes these parts away entirely. In either case a relief will be formed. In the first, where light has not acted; in the other, where by the same influence the nature of the gelatine has been changed and rendered insoluble. In the former mode swelled gelatine plates are made, and upon the latter action the "wash-out" process is based.

The peculiar kind of negative best suited for these processes, and the kind usually adopted for most photo-mechanical printing methods, is descriptively termed a "black and white" negative. Only line drawings of engravings, woodcuts, type, when used for book or newspaper illustrations, etc., can be reproduced by these methods of photo-engraving, although blended or washed water colors, India ink, and sepia drawings, as well as half-tone negatives taken from natural objects, may be made suitable for the ordinary printing press by the introduction of systems of lines or stipple. The negative for the "wash-out" process should, under all circumstances, be taken reversed, or have its film stripped from its support and turned.

Of all the methods of photo-engraving, no one has probable given such satisfactory results as the "wash-out" process, for the gelatine plates can always be kept on hand,

the resulting lines are sufficiently sharp and clear, and from a cliché once obtained any number of electrotypes can be made. The first and most important operation is to prepare the sensitive gelatine sheets.

Of Coignet's gold label, or any other kind of soft gelatine, immerse three and a quarter ounces into sixteen ounces of cold water, and, after sufficient swelling, allow to stand for forty-eight hours at a temperature of from 100° to 120° Fahr. During this time the gelatine will decay, emitting a disagreeable odor, and to prevent the formation of a scum on the surface, or from adhering to the sides of the vessel, it must frequently be agitated. When the decomposition has been completed, add six and a half drachms of white sugar, two and a half drachms of glycerine, and seventy-five minims of ammonia; the mixture having been previously colored with as much finely pulverized lamp-black as will spread over a glass plate and not destroy its transparency. Finally, two drachms of bichromate of potash, dissolved in the smallest possible quantity of water, are intimately mixed with the emulsion. After several times filtering the mixture through linen, it may be removed to the drying closet, where the temperature is raised to 130° or 135° Fahr., and left for about fifteen or twenty minutes. The glass plates to be coated with the sensitive gelatine are rubbed over with an oil rag to prevent the sticking of the films. The plates must be carefully levelled to secure an even coating. Then take the gelatine from the closet, and filter again into a jar which is provided with a mouth-piece. Care must be taken that all the vessels used, and plates also, are warm, so that the gelatine will not set before it becomes perfectly level upon the plate. After all is filtered, remove with a stiff card air-bubbles or scum that may have formed on the surface, and measure out equal quantities and coat. In order to secure films of equal thickness, a measured quantity for each plate is a necessity. The dark-room, when the gelatine plates are set, should be kept at about 70° Fahr. In two or three days, according to the arrangement of the room and weather, the plate will be dry and ready for use. The gelatine should not be stripped until perfectly dry, for otherwise it may be pulled out of shape, and will shrivel up during washing. When dry, cut around close to the edge of the plate with a penknife, and start the film on the corner, gradually pulling in from the glass, and lift it off. The glass side of the film is now brought in the printing-frame into close contact with the negative, and exposed to sunlight. Some operators sprinkle the side of the film, which has come in contact with the negative, with fine gelatine powder, to prevent sticking. The superfluous gelatine powder is, of course, brushed off with a soft piece of flannel or fine brush. All the negatives to be used are generally nearly of the same character. Hence the time of exposure, about fifteen minutes in direct sunlight, and in shade proportionally longer, can easily be estimated. The time of exposure is highly important. If too short, the finer lines and details will wash away; and if too long, the more delicate parts will become confused and sharpness will be destroyed. The progress of printing can be watched by examining the back of the film. After the right exposure has been given take the frame to the dark-room, remove the gelatine film and lay it face up on a strong glass plate which has been previously coated with rubber solution.

To develop the picture, dip a brush into a can of warm water and rub it on the gelatine in the direction of the lines on the film. After each dip of the brush and gentle rubbing, flow water over the film, and continue to do this till all the soluble gelatine has been removed. Toward the end of the operations the lines will begin to shrivel up and present a crooked appearance. But a subsequent bath of alcohol will absorb all the water from the gelatine, and straighten out the lines again. After about fifteen minutes the plate can be removed and set up to dry, after which it is laid and squeegeed upon a zinc plate coated with thick shellac varnish. All air must be expelled and the edges of the gelatine must lie perfectly flat. When perfectly dry a proof may be taken, and if the plate is correct it may electrotyped.

This simple method is, of course, applicable only to line work, but may also be made useful for the reproduction of half-

tone negatives taken from natural objects. To do this the half-tones must be translated into lines or stipple, as the printing press is not capable of producing tone gradations. Several processes have been adopted, among them that of the Moss Engraving Company, a specimen of which we showed our readers recently.*

Mr. Ives, of Philadelphia, places the bichromated gelatine film, after exposure to light, in cold water, which swells it into relief, highest where the negative was most intense. A plaster cast is then taken from this wet gelatine relief. The surface of the cast is highest where the negative was most transparent (representing the blacks of the photograph), the lowest where it was most opaque (representing the whites). Variations in height between the two extremes represent the half-tones of the photograph. The plaster cast produced in this manner is utilized for translating the body shades of the photograph into lines and dots by a purely mechanical means, as follows:

An elastic stamp of V-shaped lines or dots is inked and pressed against the relief until the flattening of the lines or dots causes them to make an even black impression on the highest parts of the relief, increasing in size where it is higher, until they meet to produce the perfect blacks on the highest parts. To obtain a transfer of the inked surface without making another photograph, the film is coated with plain collodion, by which the ink is almost entirely taken up. When dry, the collodion pellicle is stripped with the aid of gelatine and acidulated water. A copy is taken from it on a photographic plate, upon which all half-tones are resolved into lines, cross hatchings, or stipple.

More complicated, but invariably giving most excellent results, is the Meisenbach method. A diapositive is made of the original negative, and from that another negative is taken, while in perfect contact, with a very finely lined transparent plate. At about three-fifths of the time required, the exposure is interrupted, the line plate turned far enough to give any desirable system of crossing the lines first impressed upon the plate, and the exposure is continued. The collodion plate is then developed and intensified in the usual manner, and printed from upon the bichromatized film.

The Swelled Gelatine Process.

The process offers to the beginner many seemingly insurmountable obstacles, but with a little patience and practice all may be easily overcome. The negatives must be of the same character as in the "wash-out process," viz.: be "black and white." The difference between the two methods lies in the treatment of the bichromatized gelatine film after exposure to light. The best way of working is either to coat well-leveled plate glasses or plain and finely polished zinc plates with the gelatine mixture. Similar to the "wash-out process," one part of gelatine is soaked for about an hour in four parts of cold water, then placed in an iron cooking pot and heated to about 120° Fahr., when, by constant stirring, the mixture of glycerine, sugar, and ammonia is effected, and finally the bichromate of potassium is added. Then the gelatine may be taken to the dark-room and filtered into a previously warmed earthen pot, and, while still warm, poured upon the cleansed plates. When coated, the plates are laid upon a smooth and level block of ice, and after being thoroughly set and distilled, are placed in a drying closet over calcined chloride of calcium. In a perfectly dry, airy room with sufficient draught, often artificially created by means of fan wheels and air shafts, drying proceeds speedily. When perfectly dry, which can be determined by touching the film with the finger, printing may be proceeded with. As two casts are to be made from the gelatine relief, no reversed or turned negative need be made; it must be left as it comes from the camera. As in ordinary printing, the negative is placed in the frame, film side up, and the gelatine plate laid upon it; the frame is closed and then exposed to light. For this and similar kinds of printing a very strong pressure only will establish absolute contact between negative and sensi-

* See also the processes given in full in Wilkinson's new book, "Photo-engraving, Etching, etc."—Ed. P. P.

tive film. To do this the ordinary photograph press is not sufficiently strong to produce perfectly sharp copies. Very heavily constructed frames fitted with thick plate glass, and various levers and screws, are made particularly for this purpose. Twenty minutes of sunlight is sufficient to print. The frame is then returned to the dark-room, the plate removed and put in the swelling pan, which contains just enough water to entirely cover it. To remove the chromium salts from the parts of the film not exposed to light, the water must be several times changed. During this operation much water is absorbed by the gelatine; it swells up, and a relief is formed. After swelling, the film is washed and hardened or tanned in a solution of one part of chrome alum and fifty parts of water, rinsed with water, and laid upon a smooth stone slab, which has been previously rubbed with oil. The casting irons, made exactly type high, and brushed out with oil to prevent the plaster from adhering, are then laid around the plate.

Take enough of the best casting plaster or alabaster gypsum to fill the cast, and mix it with water to a thick paste; then add a pinch of salt or of powdered borax; pour the plaster paste over the casting, in order to fill all parts well, and with a brass-edged bar level it off evenly with the top of the casting iron, by resting the rule on the casting iron and working it gradually down. Care must be taken to have the casting perfectly level on top. Allow it to remain until the plaster is perfectly set, then remove the casting irons, and take the cast off from the gelatine plate. The result will be an intaglio cast of the relief in gelatine. A cast may also be made in paraffine, wax, or a mixture of both; but on account of its better stability it is advisable to work with plaster. From the intaglio plate a high relief is now cast, also in plaster. After the plaster is thoroughly set, remove the casting irons and with a wide-bladed table knife cut between the two casts and force them apart, being careful not to break the casts. If handled with care, they will separate very easily, provided the plaster has been allowed to set thoroughly. Never try to remove a cast until it has set. The plaster cast is then taken to the stereotyper and put in a metal pot, and a stereotype plate cast in the usual manner. The swelled gelatine does not allow of any great depth of lines. So when the plate comes from the stereotyper's pot, the high lights must be cut deeper by hand. This can be easily done with engravers' and wood-cutters' tools, as the metal is quite soft. While engraving the plate, care must be taken not to blur or injure any of the fine lines. The wide and open spaces are taken out with the routing machine. The plate is then mounted on a wood block and is ready for the printer.

The foregoing extract from *The Photographic Times* deserves the attention of all who are interested in the wash-out and raised gelatine process.—*American Lithographer and Printer.*

[*Translated for the Philadelphia Photographer.*]

THE USE OF STARCH IN PHOTO-ZINCOGRAPHY.

It is peculiar that, since Asser first used starch paste in the preparation of photo-lithographic transfer paper, this substance has nearly always been supplied by gelatine, gum, or white of eggs. Asser's process, as given in the *Photo. Archiv.*, 1860, page 33, is nearly like this:

A piece of unsized paper of fine material, middling thick, is covered with starch paste, put on by means of a clean sponge, and then dried. After the drying, it is allowed to float on its unprepared side in an impregnated solution of bichromate of potassium, and then hung up to dry in the dark. After the exposure under a clear, sharp negative in the copying-frame, the paper is allowed to float in distilled water until all the soluble chrome salt is removed, then it is laid upon a hot marble or slate to dry, and is polished by means of a flat-iron, or it may be allowed to dry, and exposed to the heat afterward.

Now, a small piece of unsized paper is moistened with water, laid upon a glass plate, and the water absorbed with blotting-paper.

The copy is allowed to float on its back upon the water until the starch has become

moist, then it is laid picture-side up upon the wet paper which is on the glass plate, and a piece of unsized paper laid upon the picture, which is to be rubbed with a cloth. Then the upper paper is taken away, and the process of blackening instantly commenced. Some printers' ink is put upon a stone, and with it a very little linseed oil varnish (too much of this causes failure), and this is worked on by means of a roller covered with fine cloth or flannel; then with this the picture is rolled under very weak pressure until it stands out clear in black lines, just as a lithographic stone is rolled. It is allowed to float in the water, to which a few drops of nitric acid have been added, to remove all chrome salt. If, instead of printers' ink for rolling, lithographic color is used, the picture can be transferred upon stone, since it is laid thereupon smooth while wet, and set that way into a copy-press. If the paper does not come off easily, it can be moistened with a little water.

T. Bolas recommended the following modification: Cover the Rives paper uniformly with thin flour paste, and after it is dry, let it float on the following solution:

Water	15 parts.
Spirits of Wine	4 "
Bichromate of Potassium	1 part.

To this add so much ammonia that the solution will become yellow, and smell of ammonia.

After the exposure the picture is washed, dried, and ironed, moistened again, and covered with one part printers' ink and two parts turpentine oil, put on with a brush. Later, Bolas recommended the original Asser process with unsized paper and starch; he rolled the picture with the velvet roller and very thin lithographic transfer color. Out of different experiments the following are given as very reliable:

Bank post-paper is floated twice on the following solution:

Hot Water	100 parts.
Arrowroot	4 "
Bichromate of Potassium	2 "

Let it float on the hot solution, then dry, float again, and then hang the paper up, so that the side which in the first drying was up now hangs down. The paper is satinized, exposed under the negative, and printed in the press with the following mixture:

Hard Lithographic Transfer Color	100 parts.
Lithographic Crayon Color	100 "
Palm Oil	7 "

diluted as usual with turpentine oil.

After the printing, the picture is washed with hot water. It is capable of great resistance, therefore white, delicate negatives can be used for printing. All the arrowroot must be carefully removed from the paper, since this would make the transfer uneven; good washing in warm, and lastly in cold water, is very necessary.

The transfer upon zinc or stone takes place in the usual way. The transfers are very fine and sharp, better than gelatine transfers of the same negative. Thus the process is less costly, for arrowroot costs for the same picture surfaces four times less than the opaque gelatine.

The process has been used until now for line studies, but can also be used, it seems, for half-tones if intervening plates are used at the same time.

[Asser's process with unsized paper has been too much neglected. Mr. Asser uses good, copper-print paper; we have obtained very fine half-tone pictures capable of printing from the process of portrait-negatives, without any further process, and that in the year 1860].—*Photo. Archiv.*

PRACTICAL POINTS FROM THE STUDIOS.

A Varnish for Gelatine and Collodion Cliches.—*Photographische Archiv.* gives the following formula for a varnish which may be used equally as well for gelatine as for collodion clichés:

Gum Lac, white	32 parts.
Borax	8 "
Carbonate of Soda	2 "
Glycerine	1 to 2 "
Water	320 "

Dissolve the salts in 160 parts of warm water, then add the gum lac broken up into small pieces; stir until complete solution, filter, then add the glycerine and sufficient

water to make 320 parts in all. In a few days a deposit is formed, which is separated by filtration, and the varnish is then ready for use.

The clichés should be varnished whilst they are still wet, and this operation is performed either by pouring over the coating or plunging the plate into the varnish.—*Moniteur.*

Curious Modification of the Pigment Process —The journal of the *Society of Industrial Chemistry*, makes known a curious modification of the pigment process recently discovered by Dr. Stolze. A sheet of gelatino-chloride paper is exposed to light until it acquires a dark brown color, then immersed in the bichromate bath as usual, and dried in obscurity. It is then ready for exposure under a negative. The time of exposure is increased, as is done for ordinary pigmented paper, by means of a photometer. The print, not yet developed, is fixed on glass or paper and developed in warm water. The image alone remained, being retained by the chromized gelatine, which has now become insoluble. Finally, tone in a bath of sulpho-cyanide of gold. This process is, therefore, a combination of the silver and bichromate processes, the whole in presence of gelatine.

How to Restore a Faded Print.—The last number of the *Photographic News* asks a very important question: *How can we restore a faded silver print?* This is a question that is often asked, and the above-mentioned journal says that if the print is only yellow, it is better not to attempt to restore it, but simply to copy the plate by *means of the camera*, inasmuch as the yellow portions are thus reproduced, much darker than they appear to the eye on the faded print. We have then a negative from which it is possible to obtain as many copies of the original print as may be desired.

The German publication, the *Photographisches Wochenblatt*, gives the following process for removing the yellow tone of a print made on gelatino-bromide of silver paper, one even several months old: Allow the print to remain one or two hours in a mixture of two parts of a saturated solution of oxalate of potash and one part of water acidulated with acetic acid.

The same journal says that M. Carl Srna advises for the keeping of plates that are simply developed and not fixed, to place them after development in:

Water	1000 parts.
Alum	16 "
Citric acid . . .	4 "

They are allowed to remain one or two minutes, then washed in two waters, and dried in a weak light.

This bath may also be used to save overexposed prints. As soon as the image has sufficiently appeared to show that there has been overexposure, it is placed in the bath, washed, and a new developer, better suited to the purpose, is used.—*Progrès Photographique.*

A Gelatino-bromide Developer for Paper.—This developer gives the reddish-brown tone of albumenized paper. Prepare two solutions:

A.—Water . . .	1000 c.c.
Chlorate of Potash .	130 grammes.
B.—Water . . .	500 c.c.
Sulphate of Iron .	24 grammes.
Citric Acid . .	2 "
Bromide of Potassium	2 "

To develop, mix equal volumes of these solutions, pouring B into A.—*Progrès Photographique.*

Soda Paper.—At the National Convention of Photography at Birmingham, Mr. G. W. Webster read a practical article on soda paper, that is to say, bibulous paper imbibed with sodic carbonate (the commercial soda salt is sufficient), and dried. This paper, as we have more than once said, is very useful for preserving positive paper. Jewellers have also used it for preserving silverware from the effects of sulphuretted hydrogen, etc. We think that it would not be a bad idea to see if this soda paper, placed in the frames back of the ordinary silver prints, would not effect their preservation. Who knows? Perhaps this simple means would prevent them from fading or becoming yellow. — Dr. Phipson, *in Moniteur.*

A Word about Hydroxylamine.—Hydroxylamine, about which the *Moniteur de la Photographie* has recently published an interesting article, has for chemical formula: NH_3O_2. This substance was discovered in 1865, by Professor Lossing, who obtained it in the form of defined crystals, by the action of nascent hydrogen on nitric acid. The experiments made up to the present time lead to the belief that hydroxylamine may be utilized in photography, as a reducing or developing agent. In the meanwhile, the experiments of the German physiologist, Dr. Binz, have demonstrated that hydroxylamine is a rather dangerous poison, for to caustic properties similar to those of ammonia, hydroxylamine possesses also that of being a very powerful reducing body, like pyrogallic acid. Photographers have already in their hands substances quite as dangerous as this; they need not cause alarm if used with the ordinary precautions. — Dr. Phipson, *in Moniteur.*

New Experiments with Isochromatic Plates.—At the last meeting of the London Photographic Society, a letter was received from Mr. J. R. Gotz, a corresponding member, in which this photographer relates that he has obtained two prints of the same subject which he sends to the society: one, from an ordinary plate; the other, from a cyanine isochromatic plate, the two plates having been used *without the yellow screen.* It will be seen, said the writer of the letter, that with isochromatic plates prepared with cyanine, there is no necessity for using the yellow screen. Mr. Gotz left these plates in the developing bath covered over with a porcelain plate so as to prevent the least admission of light; then, after a minute he continued the development in red light, and, finally, in orange light. He thinks that if it were possible to develop the plates in perfect obscurity, the results would be much better. —Dr. Phipson, *in Moniteur.*

Discussion in Reoard to the Thickness of the Sensitive Film on Albumenized Paper.—This question was discussed at our societies, and Mr. Wellington showed several prints on two kinds of paper. The prints made on paper having the thinnest film were more easily toned and had a better color. In three experiments, all the prints were toned together in the same bath. It is evident from these experiments that paper having a thin coating of albumen gives the best results; but, as Mr. Cowan observed, it is impossible to obtain a very plane surface unless two coatings of albumen are given; and generally the first coating is coagulated before applying the second.—Dr. Phipson, *in Moniteur.*

A New Lamp of Normal Light, Burning Acetate of Amyle.—Mention is made of a new lamp for photometric experiments. This lamp is destined to furnish a standard light, according to which the other lights are measured. It is very curious that it is proposed to burn in this lamp *acetate of amyle.* This substance is the essence that yields the delicious perfume of the pear; it is manufactured artificially by means of acetic acid and the oil of potatoes. Why was it chosen as a combustible for the lamp in question? We do not know unless it is that its composition being constant it will always give the same results. The wick tube measures 8.3 millimetres for the external diameter, and 8 millimetres for the internal diameter. This tube is filled with a solid porous wick which is fed with the acetate of amyle. Burning quietly, in a pure atmosphere, this lamp gives a light exactly equivalent to that of a *normal candle.* Since a long time the difficulty has been admitted of obtaining candles giving absolutely equal light; with the above little lamp, it is thought that the problem is now resolved.—Dr. Phipson, *in Moniteur.*

To Utilize old Gelatine Plates.—At the August meeting of the French Photographic Society, M. Mennos communicated a process for the development of old gelatine plates. M. Mennos had a stock of old plates on hand, prepared six years before; when he wished to use them, he was surprised to find that the image would not appear. He conceived the idea of warming the developing bath, and he obtained very fine negatives without any in-

jury to the gelatine. Here is the process he used: He first plunged the plate into a solution of chrome-alum, and in the meanwhile heated his developing bath to 104° F., in which he immersed the plate whilst still wet. Development was obtained with the greatest facility. This communication interests especially persons inhabiting hot countries, and those who may have to use plates possessing but little solidity. The previous immersion in the chrome-alum bath has for effect the consolidation of the film, the hot bath allowing the image to be developed notwithstanding the contracting action of the chrome-alum.—*Moniteur.*

Vitro-metallic Panes.—These consist of a wire cloth of galvanized iron, the interstices of which are filled up by immersion in fluid gelatine suitably colored. These panes have the advantage of being very solid, are less expensive than glass, are easy of transportation, and on account of their suppleness can be readily rolled or bent. It is very easy to use them for making a traveling lantern by simply using a band made in the form of a cylinder, in the middle of which is placed the candle or the source of light. The top of the cylinder is covered with a sheet-iron disk pierced with some small holes. This article may also be used for the windows of glass rooms, and the colors may be varied, some being red, some green, and some yellow. Nothing can be more simple, less easily broken, and less costly.—*Moniteur.*

Mr. Hartwick's New Objective with Wide Angle.—This objective, whose focus is only 7 centimetres (2¾ inches) covers a plate 12 x 16 centimetres (4¾ x 6⅜ inches), and embraces an angle of one hundred degrees. The price, including the diaphragms (iris), is fifty marks. With this instrument he has made dark interiors with an exposure of from two to six seconds.—*Photo. Mittheilungen.*

Protochloride of Iron Developer.—Mr. David Cooper, in *Anthony's Bulletin*, announced that the protochloride of iron used as a developer had given him excellent results. One of our subscribers, Mr. G. Margat, of Perigueux, had occasion to try this developer and he has sent us the results of his experiments. If we make a solution of 9 grammes (139 grains) of protochloride of iron for 30 grammes (1 oz. Troy) of water, and take 10 grammes (154 grains) of this solution and add to this quantity 80 grammes (2 oz. Troy 4 drs.) of an ordinary solution of oxalate of potash, we obtain an excellent developer for instantanieties. Care must be taken to add a few drops of bromide. Plates thus developed became yellow on coming from the hyposulphite bath. To avoid this, it suffices to well wash the plates as they come from the iron bath, then to plunge them into an alum bath containing a few drops of citric acid. In this way all discoloration is avoided. — *La Nature.*

[*Translated for The Philadelphia Photographer.*]

A NEW ACTIVE FORMULA FOR HYDROQUINONE DEVELOPER.*

BY M. L. MATHET.

The following formula has given me surprising results by its energy and the rapidity with which the image is obtained.

I first made some sugar of lime, such as is used in pharmacy, according to the following formula:

Hydrated Lime .	100 grammes	(3 oz. 2 drs.)
Pulverized Sugar .	160 "	(5 oz. 1 drs.)
Glycerine . .	160 "	(5 oz. 1 dr.)
Water sufficient to make . .	1 litre	(34 fl. oz.)

Mix the lime and the sugar, and add about 250 grammes (8 ounces) of water; make a homogeneous paste, which you allow to digest twenty-four hours away from contact with the air, and occasionally agitating; add the glycerine, and filter. Wash the residue with the remainder of the water until 1 litre (34 fluidounces) of the product is obtained.

I make my developer by mixing 80 cubic centimetres (2 fluidounces 5½ drachms) of the above sugar of lime with 20 centimetres (5½ drachms) of a solution of sulphite of soda at 20 per cent., and 20 centimetres (3

* See Mons. Balagny's paper on page 572.

grains) of citric acid; after mixing I filter and add to the liquid 5 cubic centimetres (1⅓ drachms) of an alcoholic solution of hydroquinone at 10 per cent. I place in this developer a plate which has been much over-exposed; it blackens almost instantaneously, and I would have attributed this result to a defective formula if the portions of the plate protected by the frame had not remained perfectly white, which proved to me that the fogging arose from over-exposure.

I was operating with a simple drop-shutter of an aplanatic No. 6 of Hermagis, the diaphragm 16, and the plates slow; I cut longitudinally the plate into two pieces after exposure (the subject being the facade of a house occupying all the surface of the plate).

One of the halves was placed in the bath of hydroquinone and carbonate of soda, the other in the bath of hydroquinone and sugar of lime; the first developed slowly and never reached the intensity necessary to obtain a good cliché, the shadows were glassy; the second portion, on the contrary, was developed sufficiently in less than two minutes, and the cliché was perfect; I reached the conclusion, and with reason methinks, that the sugar of lime associated with hydroquinone gave a developing formula permitting much slower exposures than the carbonate of soda associated with hydroquinone. Finally, the color of the cliché is of a beautiful pure black. Nevertheless, I must mention, together with the advantages of this new formula, its objectionable features. The bath rapidly becomes discolored owing to the impurities contained in the products used in making the glycerinated sugar of lime, which had been prepared with the ordinary lime, and the glycerine was not pure; I ascertained that it contained a little iron salt. I have no doubt that in using lime made from white marble and pure glycerine which may easily be obtained, or even doing away with it entirely and using only sugar of lime, the rapid deterioration of the bath will be prevented, and it will be as stable as that prepared with the ordinary formula of carbonate and sulphite of soda.—*L'Amateur Photographe.*

GLASS SIGNS.

A Process of Etching on Glass for the Production of Portraits, Pictures, or Drawings of any Kind, Solid and in Half Tints on Colored, Dull and White Glass, for the Decoration of Window Glasses, Show-cards, Signs, etc.—Plain glass plates as in the market for photographers are placed in a solution of ten per cent. of nitric acid to 100 parts of water, and cleaned with a sponge fastened on a stick. The plates are then placed in clear water and set aside for drying. This is best done in a rack, such as photographers generally use; or by spreading sheets of blotting-paper on a table, the plates may be put upon them diagonally and placed against a wall for the same purpose. When dry they are cleaned again with French white and alcohol, not further touched on the face with the fingers, and always carefully lifted by the edges with the fingers. The plates are then covered to protect them from dust and dirt.

In making the designs, we would suggest that they be made in the usual way upon the lithographic stone, one impression or as many as necessary made; the edition to be on decalcomania paper, which can be bought in any lithographic supply-house, or, if preferred, may be coated as usual when making transfer paper, but a double coat is absolutely necessary. Use one pound of ordinary cornstarch and one pound of gum arabic to a gallon of water, and from one pound and a quarter to one and three-quarters of glycerine, according to the temperature and the atmosphere. It will be remembered that the glycerine absorbs the dampness of the atmosphere and care should, therefore, be taken not to use too much of it, always using rather less than too much.

We have already observed that on cold, dry winter days one-half pound of glycerine to a gallon of water would be sufficient.

The impressions are then made with the regular transfer ink to which some mennige has been added, say four parts of transfer ink and one part of mennige. This last is obtainable from only a few dealers in lithographic materials.

The transferring is now done in a press

with elastic rubber rollers and for small sizes apprentices may use a common wash-wringer, but to those who want to make a specialty of this work, we would suggest that they get a press specially made for it, after the style of the copper-plate presses. The press need not be of extraordinary strength and can be made of wood, though iron is preferable. Very desirable rubber rollers can be got from William Gay, roller-maker, 22 New Chambers Street, New York. The transferring is done in the usual manner. We should further remark that the coating of the decalcomania must be done on perfectly unsized plate paper.

When the transfer is made (it is easily done and presents no difficulty whatever to a lithographic transferrer), the glass plate is fanned dry and dusted in the usual manner with a resin powder, consisting of one part of resin and one part of Syric asphaltum, thoroughly mixed together. The plate is now washed with a soft sponge and clean cold water in order to remove all dust remaining upon it; it is then placed in a drying-room of 60° Celsius in order to have the resinous powder fully combined with the transfer ink. The plate is then ready for etching with hydrofluoric acid. By this method we are enabled to reproduce the finest portrait, picture, or anything desired in red, yellow, blue, brown, or green, on glass, thereby obtaining beautiful window decorations or advertising signs. Such etched signs or pictures when made on white or dull glass are covered on the etched side with mercury, which produces a decorated looking-glass artistically ornamented. Slight variations, usually adopted in lithography, may be introduced without injury to the process.—*American Lithographer and Printer.*

WORLD'S PHOTOGRAPHY FOCUSSED.

According to M. Hanfstængl, hydroquinon combined with pyrogallol gives excellent results in the development of portraits. Develop with hydroquinon until all the high-lights, and almost all the half-tones, have shown themselves, then finish with a mixture of pyro, carbonate, and sulphate of soda.—*Revue Photographique.*

In the *Photographische Mittheil*, Mr. E. Vogel, gives a method for strengthening a platinum print in the same manner as a wet collodion cliché is strengthened. The print having been washed in diluted chlorhydric acid is placed in a bath containing, for 100 parts water, 10 parts of the ordinary oxalate of iron developer, and from 6 to 10 drops of a solution (1 : 6) of double chloride of potassium and platinum. The image is strengthened by the deposit of the platinum formed on it.

M. Bucquet has communicated to the Photographic Society of Versailles the following process to utilize overexposed clichés, which have become black after development, and with which it is impossible to make a print.

Place in a dish :

Water	75 parts.
Ordinary Javelle Water .	25 "

The cliché, coming from the hyposulphite of soda, is well washed, and then immersed in the above bath; with the aid of a tuft of cotton, passed lightly over the sensitive film, remove the black mud formed on the plate, and soon the cliché becomes clear and transparent. It is passed through water and placed again in the hyposulphite for four or five minutes; the operation is ended by washing in the ordinary manner.—*Progrès Photographique.*

After the Convention at Minneapolis, a number of our hard workers departed for quieter scenes and places for the enjoyment of their annual rest and holiday. They are now returning to their work, and before very long we shall begin the presentation of the prize series of pictures; probably before the year ends. In the meanwhile we have ready, or in preparation, some very lovely things, which will, we trust, surprise and delight our readers, and make our volume for 1888—the twenty-fifth of the Philadelphia Photographer—both valuable and handsome.

The subject of photo-engraving is becoming more and more popular among pho-

tographers and amateurs. Among the latter we expect a rush during the coming season, because photo-engraving affords them one of the most rapid, economical, and fascinating methods of presenting results from their summer work.

The issue of Mr. Wilkinson's book on this subject has given the thing a splendid start. Not only this, we are very glad to see that the workers in photo-engraving are willing to communicate useful and important papers on the subject. These we shall reproduce from time to time, and thus keep the ball rolling. None of us are going to stop until we equal the work of Mr. Kurtz in the "After the Banquet" picture, which appeared in our middle August number.

A VERY pretty picture was shown in one of the numbers of the *Correspondenz* recently, representing two little girls with a turtle. The larger one holds the little animal in her hands, while the small child is coaxing its head out of the shell. The attitudes are very cute and pretty.

IN a letter recently received from Dr. Vogel, we learn, with much pleasure, of the continued growth and progress of his son Ernest as a chemical expert. Some day we are going to place on record the work of the second generation, and let the world know what the young people are doing, and what they look like.

THE revival of the stereoscopic picture is also being discussed in Germany. We think it only a question of time when the stereoscope will become as popular as ever.

OUR old friend, Dr. Vogel, continues President of the Berlin Society for the Advancement of Photography. Dr. Just, of Vienna, has just been admitted to this Society as a foreign member.

ENLARGING NEGATIVES UPON GÄDICKE'S EMULSION PLATES.—The negatives upon Gädicke's emulsion plates were, heretofore, not properly adapted for strong enlargement, because, notwithstanding the very transparent paper, a certain grain was noticeable. This evil, the inventor has lately remedied by withdrawing the gelatine layer with the picture from the varnish paper, which is done in the simplest manner possible. The entirely smooth and dried negative is taken between the thumbs and a blunt blade of a knife and an edge of it is drawn through several times so that it becomes curved. Thus the two sheets are separated and can be caught hold of with the thumb-nails of both hands; by gradually pulling, the two layers will come apart. The paper will be damaged if the upper varnished sheet is left sticking to the negative. Now a little pad, dipped in alcohol, is passed over it, to smooth the varnish layer, or the Pettenkofer process can be used, in which the negative, with its rough varnished side outward, is fastened to a holder and hung up in two forms one cm. high over a glass plate upon which there is a blotting paper saturated with alcohol. Over the whole is turned up an ordinary developing dish, so that the negative is exposed to the cold alcohol vapor. In twenty or thirty minutes the varnish layer has become completely soft, and flows evenly. It is to be dried in the air and then a negative that represents nothing more than the gelatine skin with the picture is the result. The skin is sufficiently capable of resistance to withstand all further manipulations.—*Phot. Mitt.*

PHOTOGRAPHY AS UMPIRE.—A professor of the Vienna Institute makes the following proposal for the use of photography in racing. For the verdict of the judge, so often deceptive, the infallible decision of the photographic camera should be substituted. For this purpose, there were erected at the mark about six cameras, a few feet distant from each other and perpendicular to the track—they to be simultaneously exposed by electricity. As soon as the leading horse reaches the foremost camera, all the cameras are exposed at the same time. In two or three minutes the plates are developed and the result obtained shows indisputably which horse reached the mark first.—*Phot. Archiv.*

THE last mail from the Orient brings reports of the grave disturbances that have broken out in Seoul, the capital of Corea.

Of late years, these disturbances have broken out periodically; in the present case, however, the cause was peculiar. Some Chinese spread abroad the tale, that the American missionaries killed the children and cooked the bodies to prepare medicaments from them. Still another version had it that the missionaries prepared from the corpses chemicals for photographic purposes. Such things were generally believed in China, and the massacre that took place in Tientsin, in 1870, is said to have been due to rumors of the same kind.—*Phot. Archiv.*

A Receipt for Asphalt Varnish.—Boil 500 grammes of asphalt and mix 250 grammes of linseed-oil well with it; add to this, after it is cool, 250 grammes of turpentine oil.—*Amateur Photographer.*

Photographic Technique; Coating for Silver Mirrors.—If a concave mirror gets specked or mean-looking, it can be dipped into hot water, by which means the coating thereon dissolves; then it must be well dried, slightly warmed, and quickly covered with collodion strongly diluted with spirits of wine—put on with a thick Marten-brush. — F. A. Gillen, *Phot. Archiv.*

Aërial Photography with a Kite.—We have received, from one of our readers, M. Arthur Batut, at Enlaure (Tarn), an interesting communication, of which we reproduce here the essential portion: "I am seeking since about six months the solution of the problem of aërial photography by means of *kites*. The results that I have obtained, although still very imperfect, lead me to hope for complete success. The kite is not a costly appliance, is relatively of easy transportation, and is not of exceedingly large dimensions (78 inches in height by 52 inches in width) easily carries up a photographic apparatus weighing two pounds and a quarter." Our correspondent sends with his communication two photographs, measuring $3\frac{1}{4} \times 4$ inches, obtained one at an altitude of a hundred and ten yards, and the other at eighty yards, and giving a view of the house and the farm of Enlaure belonging to the operator; these prints are not sharp, but they give, nevertheless, the plan of the buildings and the surrounding trees. Assuredly, we have here a preliminary result very worthy of encouragement.—*Moniteur.*

THE MEISENBACH METHOD OF BLOCK-MAKING — A PATENT VOID.

The feature which is considered most characteristic of the Meisenbach method of producing a grain is the use of a grating first in one position and then in another (generally at right angles to the first), a proceeding which, undoubtedly, gives a more plastic and searching grain than the use of a graining screen, consisting of two series of lines ruled over each other.

As one of the Meisenbach patents (No. 2156 of 1882) has been declared, in the official journal of the Patent Office, to be void for non-payment of duty, it is interesting to give further working particulars of the best development of the method indicated (but not very clearly expressed) in the specification, and in doing so we take the substance of what has previously appeared in the *Photographic News:*

The old idea of placing a network between the half-tone negative and the photo-lithographic paper on which the transfer is made, and thus breaking up the tone, is one which has been modified in several ways of late. The term network must be taken in a very wide sense, and includes film negatives obtained by photographic and mechanical processes from originals of various kinds; one of the simplest ways of getting such a network film being to photograph a sheet of paper or cardboard which has been ruled with closely and regularly spaced cross-lines, and to strip the film from the negative thus obtained; while another method is to work a grain on a lithographic stone, and to make a vigorous impression of this upon thin or translucent paper.

A finely woven gauze stretched on a frame was found to be fairly satisfactory, excepting as far as its texture was found to be uneven; threads of unequal diameter occurring here and there, and consequently damaging the result.

Husnik has simplified the method, and gives the following particulars:

In the first place, a series of clean parallel lines are engraved upon a polished lithographic stone, it being necessary to use a diamond point and a good ruling machine, and the lines should be so close together that there are about a hundred or a hundred and thirty to an inch. The stone thus prepared is got ready for printing in the usual way, and impressions are taken upon dull surfaced enamel paper. One of the impressions is then photographed, either on the same scale or slightly reduced; but two negatives are made; one with lines corresponding to the long way of the plate, and the other with the lines corresponding to the narrow way of the plate.

The photograph to be copied is now focussed, and one of the line negatives is interposed between the objective and the sensitive plate, and, indeed, quite close to the latter. About half the exposure is now given, after which the lined plate in front of the sensitive surface is replaced by that lined plate on which the ruling is in the contrary direction, and the remainder of the exposure is given. On development there is obtained a negative on which the gradations of the original are fairly translated into a network grain, and which negative yields by the photo-lithographic transfer process, by the asphalt process, or by the albumen process, a relief block having all the good printing qualities of the best commercial work.

Meisenbach, in his specification, does not make it very clear that the "shifting" is turned round so as to bring one set of lines at an angle to the other, although this seems to have been the meaning. He says:

"A transparent plate is hatched or stippled in parallel lines. A transparent positive is made of the object. The two plates are joined, preferably face to face. From the combined plates a definite negative is photographed in the ordinary manner. In order to cross-hatch and break the lines of the shading for obtaining a more plastic appearance of the printings made from the typographic or other block, the hatched or stippled plate is shifted or moved once or more during the production of the said definite negative. This negative is transferred in the usual manner on to a plate of suitable material, which is graved or etched in the usual manner to form a typographic block. For the engraving plates the negative is transformed into a positive, and the latter is transferred on to the etching plate in the usual manner. The negative produced from the combined plate may also be used for the production of photographs and photo-lithographic plates. Both the object and the hatching or stippling may be produced photographically on one and the same plate, in place of using two separate plates, and this plate used direct for the production of an engraved plate. On the other hand, when typographic blocks, photographic, or photo-lithographic plates, and the like are required, a negative must be made for transfer. To obtain cross-hatched or broken shading its original is moved during photography. Having thus described the nature of my invention, and the manner in which the same is to be carried out in practice, I wish it to be understood that I do not claim broadly the manufacture of typographic or other blocks by means of photographic plates, nor do I claim the use of a transparent plate with hatched lines in such manufacture; but what I claim, and wish to secure by letters patent is: The one or more times exerted moving or shifting of the hatched plate on the photographic negative or positive plate during the production of the definite negative or positive from which afterward the typographic or other printing block is made, as and for the purposes set forth."—*Photographic News.*

THE POSITIVE CYANOTYPE PROCESS.

Or Method of Reproducing with Dark Lines on a Clear Ground, Facsimile Copies of Drawings, Plans, and Tracings.*

BY COL. WATERHOUSE.

The following method of reproducing plans, tracings, etc., drawn in black ink on white paper or tracing cloth, is known as

* Compiled in the Photographic Office, Survey of India Department, Calcutta.

the "Positive Cyanotype Process," and has the great advantage of giving copies of the drawing reproduced directly in dark blue lines on a white ground, while, unless a photographic negative be used, the negative cyanotype process gives prints with white lines on a dark ground, which are not so easily legible as the positive prints, though the process is simpler. Both methods were the invention of Sir John Herschel, but have been improved and perfected by Poitevin, Marion, Pellet, and others in France, and the positive process is now more commonly known by the names of *Cyanofer Gummoferrique*, which have been given to it in that country.

Apparatus.—The apparatus required is simple, and consists of a pressure-frame with plate glass, similar to those used for ordinary photographic work, and large enough to take the largest tracing or drawing required. The back-board should be jointed in three, and have three cross-bars. In large frames four or five cross-bars may be necessary. A piece of felt or thick flannel should be cut to the size of the frame and kept with it; in place of the felt a few sheets of clean, soft paper may be used. The glass of the frame should be kept clean on both sides and free from scratches, and the felt or paper pads should be kept thoroughly dry, and be well aired in the sun before use. With printing-frames of large size, it may be convenient to mount them on a pivoting-stand, so that they can readily be placed at any angle perpendicular to the sun's rays, or turned face downward while being run in and out of the dark-room, or during the examination of the test slips. Sometimes, instead of a wooden pressure-frame, a thick plate of glass only is used, supported on an India-rubber air cushion, the pressure of which against the glass gives very perfect contact. It has also been proposed to obtain close contact in a simple way, without the use of glass plates or frames, by stretching the sensitive paper and tracing over a cylinder; the cylinder has, however, to be kept turned during the progress of the exposure. For work up to the size of a double elephant sheet, the pressure-frame will probably be the most convenient arrangement.

Dishes and Trays.—At least three trays will be required for chemical solutions and washing; but it is strongly recommended to have four, so that each tray may be kept for a special purpose. Two of the dishes, intended for chemicals, may be made of *papier maché*, or of wood lined with gutta-percha or India-rubber. As India-rubber and gutta-percha do not stand the Indian climate well, it will be better to use trays made of wood well varnished with shellac varnish, or a composition of:

Asphaltum . . .	7 pounds.
Beeswax	2 "
Linseed Oil . . .	1 pint.

Before the varnish is dry, the tray is well lined with strong linen cloth, and then coated again two or three times with the varnish. According to Fisch (*La Photocopie*), trays lined with lead may be used for the prussiate and acid baths. Where the arrangements are fixed, these will perhaps be the most convenient, especially for work of large size. The lead might be varnished with advantage, and the coating renewed as necessary. The other two trays, used for washing the prints, may be made of strong sheet zinc, or of wood lined with zinc. For these two trays, water-supply, with pressure of at least five or six feet, will be necessary, and should be led into them by India-rubber tubes about one inch in diameter, and not quite long enough to reach to the bottom of the trays. The taps may be fixed about eighteen inches above the troughs, and the India-rubber tube be from ten to fifteen inches long. A rose may be attached to the end of the rubber tube, but it is better to have an additional rose-jet as noted below. All the trays should be about three or four inches deep, so as to allow room for about one inch depth of fluid without fear of splashing over. The zinc trays should be occasionally scoured with fine sand and a little solution of potash or soda. It will be convenient to have the four trays arranged in order, as shown in the diagram, at a height of two and a half to three feet.

1	2 + Tap	3	4 + Tap
Prussiate bath	Water bath* +	Acid bath	Water bath* +

* Tap with rose.

It will also be found a convenience in washing to place an additional tap at the right-hand corner of the washing trays, fitted with a foot or two of half-inch rubber tube, carrying at the other end a copper rose with a bent neck about six or eight inches long, which may be held in the hand, so as to direct the water jet all over the sheet, and thus remove the gummy coating without brushing. It is recommended that a sheet of plate glass should be placed in the zinc tray so as to obtain a perfectly level surface, which will facilitate the brushing, and require less water. It is more easily kept clean than the zinc. For preparing the sensitized paper, a flat board—or, better, a sheet of glass—provided with clips, for holding the paper while being coated with the sensitized solution, will be necessary; also some broad, soft camel's or badger's-hair brushes for coating the paper and clearing the prints. Thomson's patent damping brushes, which consist of a piece of fine felt fastened round a flexible wedge-shaped piece of India-rubber attached to a handle, are very suitable for applying the sensitive solution. If these cannot be obtained, a brush may easily be made by fastening some velvet or felt on to the wooden handle of an ordinary four-inch damping brush. Some glass measures, funnels, and suitable vessels for mixing and holding the various solutions will be necessary; also some stoneware jars or wooden tubs in which to prepare the acid and prussiate solutions in quantity, and some stoneware funnels for filtering these solutions when necessary. A Baumé's hydrometer for heavy fluids will be useful for ascertaining the strength of the perchloride of iron and prussiate solutions. It should also be graduated with a scale of corresponding specific gravities.

Chemicals —If the sensitive paper is purchased ready prepared, the only chemical necessary will be ferrocyanide of potassium or yellow prussiate of potash, which should be of good quality, and some sulphuric or hydrochloric acid. Some oxalate of potash will be necessary for removing blue stains from the prints, and caustic potash will be found useful for removing stains from the fingers, and for cleaning the zinc trays. For preparing the sensitive paper, the following additional chemicals will be necessary: Gum Arabic, which should be of good quality, white and readily soluble; tartaric acid, or ammonio-citrate of iron, according to the formula employed, and perchloride of iron. The latter salt is commonly sold in amorphous semi-crystalline lumps, but very readily deliquesces into a syrupy fluid, and therefore it may be more convenient to mix its solution to a certain strength by the aid of the hydrometer.

A solution of perchloride of iron at 45° Baumé contains about 47 per cent. of the anhydrous salt, and its specific gravity at a temperature of 60° F. will be about 1.453.

Ready-sensitized Paper.—Paper specially prepared for this process by various continental firms is now an article of commerce easily obtainable in London or Paris. Some of Pellet's paper obtained some years ago from Mr. G. E. Chapman, 113 Victoria Street, Westminster, who also supplies all necessary apparatus and materials for the process, has lately been used in the Photographic Office, Calcutta, and found to be in good order. In many cases it might be more convenient to purchase the paper ready for use than to prepare it. Without proper appliances it is difficult to get an even coating.

Preparation of the Sensitized Paper. — Two methods have been tried in the Survey of India Photographic Office, Calcutta, both of which have been found to answer well.

Paper.—It is important that the paper used for the prints by this process should be hard and well-sized, so that the sensitizing solution may be kept as far as possible on its surface, and stains avoided. Good ordinary drawing paper is suitable, also the Rives or Saxe paper generally used for photographic prints. The thick photographic paper, No. 50, especially prepared for this purpose by Messrs. Schleicher & Schull, and obtainable from Messrs. Treacher & Co., of Bombay, has been found to give the best results. Bank post paper, either thick or thin, is not so suitable.

The Sensitizing Solution. First Method (*a*).—The following two solutions are made up separately:

1.—Gum Arabic (best) . .	170 parts.
Distilled Water . . .	650 "
2.—Tartaric Acid . . .	40 parts.
Distilled Water . . .	150 "

When the gum Arabic is perfectly dissolved, which is facilitated by first powdering it, filter the solution (or strain through muslin) into a clean vessel. Then add, constantly stirring, the tartaric acid solution. When they are thoroughly mixed, 100 to 120 parts of a solution of perchloride of iron at 45° Baumé (specific gravity 1.453) are added in the same way, very slowly and with constant stirring, after which the mixture should be set aside in a dark place for twenty-four hours. Distilled water is then added until the mixture shows a density of not more than 1.100 on the hydrometer. It is essential that the mixture of the different solutions be made in the order given above. If the perchloride of iron were poured direct into the gum solution, the latter would be immediately coagulated or thrown down in a sticky, insoluble mass, which can only be brought back to a liquid state by adding an excess of tartaric acid solution; but when this latter is already present in the gum solution, there is no fear of coagulation. The solution is of an orange-yellow. If kept carefully protected from light, it will keep good for a long time.

Second Method (*b*).—Another sensitizing solution, recommended by Captain Pizzighelli, of the Austrian Army, which has been found to give brighter prints than (*a*), is made in the following way: three solutions are made up of

1.—Gum Arabic . . .	20 parts.
Water	100 "
2.—Ammonio-citrate of Iron .	50 parts.
Water	100 "
3.—Perchloride of Iron . .	50 parts.
Water	100 "

No. 1 can only be kept a few days; Nos. 2 and 3 keep for several weeks in well-stoppered bottles. When required for use, they are mixed together in the proportions of 20 parts of No. 1, 8 parts of No. 2, and 5 parts of No. 3, *and in the order given*, or the gum will be coagulated. Should this occur after all, the mixture may again be rendered liquid by adding a few drops of glacial acetic acid. In any case, the mixture of Nos. 1 and 2 thickens on the addition of No. 3, and in a short time loses its glutinous properties, and after standing a few hours becomes a thick magma; it is then, according to Pizzighelli, at its best. It has been found, however, difficult to coat the paper with the mixture in this condition, and it is better to add a little acetic acid before adding No. 3, in order to prevent the mixture from thickening. The solution will not keep more than a few days. Whichever of these two sensitizing solutions is employed, the subsequent processes are the same.

Sensitizing the Paper.—This operation and all the subsequent ones, except the exposure to sunlight, must be performed in a room iluminated by yellow light passing through one or two thicknesses of yellow paper or calico, fastened over the windows, or by candle- or weak lamp-light. The paper is laid smoothly down on a drawing-board or glass plate, and must be firmly fastened down on two sides with pins, rods, or clips. It is of importance to note that the sticky nature of the sensitizing solution is liable to cause a dragging of the paper from its fastenings, which, if not firm, may cause the paper to crease or tear. The sensitizing solution is now poured into a flat dish or plate, and applied to the paper with a soft broad brush, as described above, or with a piece of soft sponge, in an even coat, passing it lightly over the paper, up and down and across, taking care to equalize the coating as much as possible, and to avoid streaks. The coating should not be too thick nor yet too thin. Each piece of paper coated should be hung up at once to dry in a dark place, preferably in a drying-box heated by a stove. It is important that the paper should dry quickly, so that the solution may not sink into its substance. The paper is said to keep indefinitely, provided it be protected from damp and light. As soon as the papers are dry, it will be well to put them away carefully in an air-tight tin case. It has been found in the Photographic Office that the paper prepared by the first method will keep in good order, but that prepared by the second method will not keep more than a day or two, and

therefore must be freshly prepared as required.

Printing or Exposure to Light.—The glass of the pressure-frame being thoroughly clean and bright on both sides, close the yellow windows of the dark-room, and lay the tracing face downward in the frame, and over it a sheet of the sensitized paper with the prepared or yellow side in contact with the back of the tracing. Over the paper lay a sheet of felt or some sheets of clean paper, which should have been previously dried in the sun, and with both hands carefully smooth outward from the centre. Then put in the back board of the frame and fasten down the centre bar, having laid the test-slips in position, after which fasten down the end bars. Unless the plate-glass, the tracing, and the sensitized paper are in close and uniform contact all over, it will be impossible to obtain sharpness in the finished prints.

If a tracing on paper is creased and wavy, it is recommended to fix it on the glass-plate by gumming the edges to the glass at intervals. The back of the paper is damped with a sponge, and instantly swells out in waves, but afterward stretches perfectly smooth on drying. In this way the smoothing is done once for all, and perfect sharpness all over the proof is secured. The frame should be exposed toward the south, so that the sunlight may fall perpendicularly upon it, or so that it may get a good direct light. Care should be taken that no shadows or bright reflections fall upon it. The sensitized paper must be kept smooth and free from creases, which would prevent perfect contact with the tracing. In damp weather special precautions must be taken to prevent the sensitive paper being affected by moisture during the operations. The exposure varies according to the intensity of the light. In direct sunlight an exposure of fifteen to forty seconds is sufficient to produce the reduction of the iron salts to the state of ferrous chloride, except in the parts protected by the lines, where it remains in the state of ferric chloride. In the shade or dull light the exposure may be prolonged from one to five minutes ; in rain five to fifteen minutes, and in dull, foggy weather may require fifteen to thirty minutes or longer. One soon learns to guess the proper exposure under ordinary conditions of working. It is important, however, that the exposure should be exactly right, and therefore, unless the exact time required is known from past experience, it is advisable to make use of the following simple test: A few lines of varying thickness are traced on the edges of the drawing to be copied, in the same ink as was used to make the drawing. Over these lines and between the drawing and the sensitized paper are placed some slips of the same sensitive paper, about one inch wide, the ends of which protrude beyond the edges of the printing-frame in such a way that each slip can be drawn out of the frame at will.

It is then possible, by testing the effects of light on each of these slips with the developing solution successfully at different intervals, to watch the progress of exposure, which is not possible in any other way, because the paper changes color but slightly under the influence of light, and by opening the frame there would be risk of doubling the lines. When it is not convenient to draw the test lines on the tracing itself, they may be drawn on a small separate piece of tracing paper of the same quality as the original tracing, which is placed in a small pressure frame and exposed alongside the tracing being copied, and under exactly the same conditions of lighting. To apply the tests expose the frame to full sunlight for a few seconds, then turn it over to protect the sensitive paper from light, and withdraw one of the test-slips. Then immediately plunge the end of the slip which was inside the frame and under the black lines drawn on the edge of the drawing into the solution of ferrocyanide of potassium used for developing, and watch its chemical action for forty to fifty seconds. If the lines appear at once in blue, but the ground of the paper is also tinted blue, the exposure is insufficient and must be continued. These tests are continued, after intervals of a few seconds, with fresh slips of test paper, until a point is reached when the paper remains yellow and quite free from blue spots, but the lines appear sharply reproduced in blue, which indicates that the exposure is exactly sufficient. If, however, the ground of the

paper remains yellow, but the lines are broken and faint, the print has been over-exposed and should be rejected. The print, having been correctly exposed, is taken to the dark-room, and there removed from the frame. If the copies are rolled up, put in a dry place, and excluded from the light, they may be kept for some hours, or even days, before being developed, and thus the printing can be completed under uniform conditions in the best part of the day.

Development of the Prints.—This operation must be performed in yellow light. The developing solution consists of a solution of ferrocyanide of potassium at twenty per cent., or about saturation. Should crystals form in the solution, water should be added to just dissolve them. The specific gravity of the solution should be about 1.1275, or about 16° B., and it should not be used to saturation in hot weather, when more of the salt will be dissolved. The solution is conveniently prepared by putting a quantity of the yellow crystals into an enamelled pot with two or three times the quantity of boiling water, and stirring the solution from time to time with a wooden rod. The solution is poured off into the tray as required, and more crystals and water added as necessary to keep up the stock. The bath can be used until it is exhausted, and is in no way dangerous. A sufficient quantity of this solution at the strength indicated above should be poured into the first tray so as to fill it to the depth of about an inch. The print should not be allowed to touch the bottom of the tray, otherwise stains will be caused. Before commencing to develop, the prints are laid, face downward, on a table, and the edges turned up carefully with the aid of a straight-edge, so as to form a sort of tray three-quarters inch in depth. This renders the sheet more easy of manipulation, and leaves the back white, and in the end saves time. The copy must then be floated, face downward on the prussiate bath (No. 1), care being taken not to get any of the prussiate solution on the back; any air-bubbles must be removed by each of the corners of the copy being quickly lifted in turn by one hand, and gently lowered again, the other hand being used at the same time to drive out the air-bubbles from the centre. After floating the copy on the prussiate bath for half a minute, the copy must be lifted by raising one end with care. This can be done without getting any of the prussiate on the back, which otherwise would leave blue stains. The copy must now be held up, and the action of the prussiate allowed to continue, but only so long as the yellow ground remains free from blue spots. The longer the copy can be kept with the film of prussiate on, the stronger and darker will the lines come out. As soon as blue spots begin to appear on the yellow background, the copy must at once be immersed, face downward, in the zinc tray (No. 2), already filled with clean water. This checks the further action of the prussiate solution. One edge of the paper must now be depressed beneath the surface of the water, and the whole paper then lifted by that edge; the water will thus be made to flow all over the back of the paper. This washing must be repeated two or three times, then the copy most be wholly immersed in the hydrochloric acid bath (No. 3) for five to fifteen minutes, and its surface dabbed all over with a brush in order to start and loosen the blue mucilage. The copy is next taken out of the acid bath, and must be laid, face upward, in the empty zinc tray (No 4), where it must be well rubbed all over with a brush to get rid of the superficial blue mucilage, and then copiously flushed with plenty of clean water. The lines of the copy will then be found to stand out blue on a clear white ground. The copy must be hung over a half-round piece of wood to dry. If only one zinc water tray is used for washing in after the chemical baths, care must be taken to rinse it out well after each washing, as the slightest admixture of the acid and prussiate solutions would stain the copy blue. It saves time if several copies be developed up to the acid bath stage, and left, care being taken to turn each copy face downward before another is put on the top of it; also, always place the copy in the acid bath with the face upward, then brush over with the acid solution, and turn face downward.

Acid Bath.—Either sulphuric or hydrochloric acid may be used for clearing the

prints. The former requires more precaution in using than the latter. It must be mixed in strong stoneware vessels by adding 3 parts of the acid to 100 parts of water, and not *vice versâ*. The strength of the hydrochloric acid bath is from 8 to 10 parts of acid to 100 of water. A mixture of two quarts of the acid with five gallons of water will fix about 1000 copies double elephant size, after which the solution becomes full of blue precipitate, and should be renewed. the objection to the use of this acid is on account of its fuming, but this is slight.

Causes of Failure.—1. The ground appears blue. This arises from underexposure to the light, or from the print having been kept too long exposed to the action of the prussiate bath. 2. The lines are broken and pale, while the ground remains white. This may be due to overexposure, or to the lines of the tracing not being sufficiently opaque to stop the passage of light through them. 3. When the print is put in the acid bath, the lines turn a dark blue, which washes off when being brushed. This arises from insufficient development in the prussiate bath; if the ground is also blue spotted, it is from underexposure.

Removal of Stains.—If, in spite of all precautions, stains or spots of blue appear on the ground of the print, they may be easily removed, or alterations made in the drawing, by means of a solution of oxalate of potash made by dissolving one part of the neutral salt in four parts of water. A solution called "blue solving" is sold ready prepared for this purpose. The liquid is applied lightly with a camel's-hair brush to the stains or lines to be erased, and dried off with blotting-paper. When dry the parts will appear white. This solution should only be applied to the prints when dry. Blue stains on the fingers may be easily removed by means of a very weak solution of caustic potash or soda, and may be avoided by the use of India-rubber gloves or finger stalls. Prints produced by this process are quite permanent and unchangeable by light or damp.

Preparation of Drawings or Tracings.—Any drawing or print in black ink on white paper not too thick can be copied by this process; but to secure the best results it is preferable to use tracings with a clear translucent ground and black opaque lines carefully prepared for the purpose. The tracing paper should be quite white or slightly blue, fresh and transparent, of even texture, and free from stains or spots. Old paper, which is generally yellow and brittle, should not be used. The tracing, or parchment, papers specially prepared by Messrs. Schleicher & Schüll, for photographic work, are to be recommended, and are obtainable from Messrs. Treacher & Co., Bombay. The drawing must be made with perfectly black ink, in firm full lines, especially the finer ones, so that they may be quite opaque. Some Indian yellow or burnt sienna may be added to the Indian ink to give it additional opacity. Care must be taken to keep the back of the tracing clean and free from anything which might print through and interfere with the clearness of the design. As far as possible, all lines usually drawn in color should be drawn in black dotted lines of different kinds. However, if the use of color in the original is compulsory, red lines should be drawn in thick vermilion or burnt sienna; yellow lines with Indian yellow or chrome yellow; brown with burnt umber, sepia, etc.; blue and green lines with a mixture of chrome yellow and dark Prussian blue in different proportions. Pale blue lines, for water levels, etc., will not reproduce, and should be drawn in black. All washes of color should be avoided on the tracings. They can be put on after making the reproductions, and may in many cases be replaced by ruling or cross-hatching. Tracing paper is recommended in preference to tracing cloth as more even in texture, and allowing of finer lines being drawn on it.—*Photo. News.*

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 515.)

Indoor Portraiture.

It is the desire of almost every amateur, and his intimate friends also, after he has developed a few plates, to take portraits of some one or all of the family circle. Now

this is a very pardonable desire, too. But, unfortunately for some, and the reverse for others, the amateur essays his first shot almost always on the "baby," if the family is provided with one, or the family dog, two of the worst subjects that he could have chosen, as any one will acknowledge after his first trial. But I would not say to him "don't," for his very failure will, or should, cause him to think why he failed, and to discover some remedy for the failure; thus he will gain much to aid him in the future. I am afraid that too few of the amateurs indulge in this part of the beautiful art under the misapprehension that a skylight is absolutely necessary to insure success. It shall be my aim, therefore, in this article, to attempt to disabuse your mind of this error.

Home portraiture requires good taste—a certain artistic taste in posing the figure—selecting the best side of the face, getting a natural expression, and, above all, so lighting the subject before the camera as to get a good likeness; all these require an innate or cultivated artistic feeling. Professionals will tell you that oftentimes proofs of the most superior qualities or technical excellence will be rejected to their chagrin for others less so, simply because the latter is the most characteristic likeness. Amateurs are making every day portraits of a quality to vie with those of the most renowned professionals. But very rarely have they at their command all those accessories or appliances found in a well-established studio. Such being the case, their successful results are all the more to be praised and appreciated.

Skylights, as a rule, not being one of the amateur's holdings, he is forced to take his portraits either out of or indoors, and for this reason he should select if possible a room two or three times longer than it is broad, with high ceilings, and a window facing the north. The higher the window the more preferable it is, for you get more top light. Should the room have more windows than the one you desire to utilize, cover them with some thin material, not of a too dark color to obstruct the light. A young amateur makes the mistake of throwing open all the windows in order to have plenty of light. A failure naturally takes place, and unless he thinks hard he is apt to place all the cause of his failure upon what he is very apt to ascribe it to—"not enough light"; when in reality there was not an insufficiency of light by any means, but it was not of the proper quality — not sufficiently diffused. And it is this diffused light (artificial) that is so necessary in portraiture to enable us to soften the high lights, and to break up too strong shadows. And this is accomplished by the aid of screens or reflectors.

Having a room on the second floor, preferably higher, select the window that will give you working space on both sides of it. A corner window, with the sidewall close to it, brings the background so close to the sitter that a shadow of the figure would be make upon it, and therefore should not be chosen. The window being open, the curtains pulled back or removed, roll the shade up to its highest point. If there is sunlight or even a strong light upon it, not being able to use a northern exposure, darken the lower half of the window with some thick white or gray material (unbleached sheeting is very good). Different complexions require different treatment. With a dark complexion the white is preferable as it will assist in diffusing the light over the face. By no means ever allow sunlight to fall upon any part of the sitter. Should the sunlight be very strong at the upper part of the window, introduce a screen of cheese cloth or very fine cambric, but never anything thicker. Properly arranged this can be made to assume any angle desired. The chair for the sitter should be placed about eighteen inches away from the wall, and the seat of the chair about twelve inches back from the window. This will bring the knees of the sitter about on a line of the window. Place your camera close to that side of the room in which the window is (the window being between the sitter and the camera) so that the lens will be parallel with the wall in which the window is. Raise the tripod, and bring the bottom of the camera on a line with the top of the sitter's head, and then depress the lens board or front of the camera towards the face of the sitter, so that a line drawn horizontally across the centre of the ground glass will

pass under the chin, and sometimes lower. Looking upon the ground glass you will easily see whether there is a good light upon the sitter or not. Focus upon the eye, then the eyebrows, and lastly, if possible, the eyelashes. Do not use too small a stop during exposure. For backgrounds I prefer the bare wall if possible. Should the wall be papered then the most suitable background is some material of a drab or light slate color, placed far enough back to prevent the possibility of the sitter's shadow being thrown upon it. You can make your background of a window-shade of the right color, or of thick unbleached muslin coated with white-wash to which has been added a little lampblack and glue. The exposure takes from three to six times as long as out of doors according to the light, therefore the more rapid the plate the better.

Long exposures, followed by slow development, certainly produce the best results. Let us seat our subject, and look at his head. We will find the light falling strongest upon the top and at an angle of about 45 degrees; striking the forehead on the side toward the window and passing down toward the lower opposite side of the face, throwing the shadow of the nose upon the side of the upper lip—this is the effect produced by the skylight. After a little education of the eye, you will be better able to tell whether a better effect can be produced by moving the subject a little forward or backward, a little further away, or a little nearer the window. If you want a three-quarter face the light must be made strongest on the small side of the face by turning it a little away from the window. If the light is wanted upon the larger side of a three-quarter face then turn it a little towards the window; let the eyes always look straight ahead; place the sitter far back in the chair and throw the shoulders and chest forward by placing a small roll of clothing or something of that kind behind the shoulder blades and between the back of the subject and the chair; have the chin high enough, and the face perpendicular. Head-rests are at the best uncomfortable; you can use one or not as you like. If the side of the face away from the window is too dark, which is the case almost always, place a white screen, not nearer than three feet, to reflect a little light upon this side of the face. Take care that you do not have too much, for then the face will be flat, and all contrasts destroyed. Be careful also that a great white spot is not reflected upon the eye. The best way to study the effects of light or lighting, and to quickly educate the eye also, that I know of, is to procure a plaster cast head and bust, nearly if not fully life size. By this means you will be more easily enabled to apply the rules that you have or should have read and studied, as laid down by the best masters. Place the plaster cast upon a small table, full face position, near where you propose to have the sitter, with a background behind it, if you are compelled to use one. Step back, say about ten feet, and study how it looks. It may be some time before your eye learns how to take in all the fine gradations of light and shade upon the cast. But here, as well as in every other thing of life, patience, careful study, and a sincere intention to succeed, will bring, before you are aware, the reward of your efforts. With the cast in the position as indicated, and without the aid of the camera study the lighting of the whole. You will notice the clear white on the window side, the dark shadow just the other side of the nose, and a still darker tone of the ear furthest from the light. Having carefully noted all these, then turn the cast to a three-quarter face. Study all the effects presented here; then turn the cast to a profile facing the light; study. Reverse, and have the back of the head toward the window. Do not be in a hurry; all these different appearances are to be observed and studied slowly and carefully. Now, with the aid of a reflecting screen placed about four feet from the dark side of the cast, and at right angles to it, go over all these studies again; then by moving the reflector nearer to or further away from the cast, you will soon be able to detect when the dark or shaded side is nicely graduated in tone to the light side. I would advise you by all means to take negatives of the cast under the different conditions and positions which have been described. It will help you more to produce a good portrait than dozens of happy-go-lucky shots. When

taking a portrait from life remember that your reflector must be at right angles to the face, for if it is not, it will either throw the light from behind the ear forward on the cheek, or cast a light into the eye of the shaded side of the face. No one wants a big white spot in the eye of his portrait.

Groups of from three to eight persons, as a rule, are more successfully taken, better likenesses, than a single sitter. One reason for it is that the persons composing the group are more natural in their attitudes and expression from their close proximity to each other, which does away with a certain feeling of restraint and self-consciousness that attacks almost every one. The mode of taking a group is somewhat different from that of the single. Any ordinary room will do, provided you have a large window with the sun upon it; raise the shade and place an ordinary sheet over the whole window. Place the group in the diffused light. Should you not have enough light, open one or more windows and put on the floor a small sheet where the sun will fall upon it. But as a rule it is best to use only one window. The exposure should last from ten to twenty seconds with a rapid plate, and a smaller stop can be used than for a single sitter. Take your time in development.

Home portraiture can also be practised at night, but as it comes in properly in the paper on Instantaneous Photographs, it will not be considered here.

Babies from three years and under, as a rule, are considered anything but agreeable subjects for the photographer, and the photographers receive the least mead of praise for this of any of their work. To be a successful taker of babies is certainly for the professional a financial success. But can the amateur also become successful in this branch? Certainly. The one great thing for success is being able to catch the expression which, though evanescent, still the plates are rapid enough to accomplish it. How then can the expression be caught? Many employ jumping-jacks, and such like toys, to attract the attention and light up the face of the little darling. But from the peculiar nervous temperment of some children such toys prove disastrous to the picture. The very best photographs of children as to expression and likeness I ever saw were taken by an amateur friend, now gone to his long home. His works live after him, and are prized as apples of gold by his friends. How he was so fortunate in obtaining the real expression of the children was for a long time a complete mystery to me. His evasive "Oh, it is a way I have," was far from being satisfactory. But I caught him once, and the secret was out. In the first place, he always focussed upon the chair or whatever it was to be taken on, so as not to tire the child, and after arranging its position, and the reflector if required, just as he was about to expose he started a music box, which he had concealed about his person, playing, and as soon as the child's face lighted up to please him, the exposure was made. He seemed intuitively to know from the face of the child whether a lively or a soft tender air was the best one to produce the expression on the child's face which was the most natural to the child, and the one he desired. I have often thought that by the aid of this little instrument, concealed and playing, much better photographs could be obtained of adults—I mean much truer, everyday, natural likenesses. Try it; it will do you no harm, and perhaps much good work will result.

(To be continued.)

OUR PICTURE.

Some time ago we received a 11 x 14 portrait which struck us as peculiarly excellent. Coveting the pleasure which came from its study, for our readers, we asked the maker of it to lend us the negative for the purpose of making sufficient reduced negatives to print for an issue of our magazine. Our request was promptly responded to, by Mr. Joseph L. Douglass, of Columbia, Mo., to whom we are indebted for the result which embellishes our current issue. The fair subject played the character of "Calanthe," in "Damon and Pythias," as an amateur, and the picture represents her in that *rôle*. Mr. Douglass says it was suggested to him by Mr. McMichael's "A Study Fair," which appeared in our last December number, and gave so much pleasure. When

our patrons read his letter below they will agree that he is worthy of his leader.

Mr. Douglass, in answer to another request, gives us the following points concerning himself, which we publish for the encouragement of the second generation, as follows:

"I commenced learning photography in 1884. Have been in business for myself about eighteen months. Have read and studied everything I could get on art and photography. I never made more than a dozen negatives until about a year ago; as I had an operator previous to that time. I have a large operating-room, with a north side-and top-light, and use curtains, head screens, and reflectors; I use Cramer plates No. 40, the quickest plate I can get, and develop with Cramer's formula No. 11. I never, under any circumstances, show negatives. I tone with the acetate of soda bath. The skylight was put in after plans in *Wilson's Photographics*. I am getting $5.50 for cabinets; and I think if photographers would see how good they could make pictures, in place of how cheap, they would be appreciated more."

This from a gentleman so young and so skilled in our art, should encourage practical photographers everywhere to do their very best always, because everything is possible for them. The prints were made on the famous N. P. A. extra brilliant Dresden paper, imported for us by Messrs. E. & H. T. Anthony & Co., of New York. They were made by Messrs. Roberts & Fellows, Philadelphia.

PHOTOGRAPHIC MOSAICS. 1889.

It is our determination to make *Photographic Mosaics* for 1889 our crowning effort in that direction. Each day brings some new gem for setting in the collection. The articles seem to be characterized by more than usual care; the authors seem to feel that in these days when there is *so much* written about our art, that they must exercise extraordinary care, so that what they send, so far, is concise and practical. Let those who intend to follow suit, please do so soon, or they cannot be included in the roll of honor. Dealers are already gathering their orders in, and the promise is that we shall exceed all other editions. No matter how many newer, and larger, and butterflyer annuals and magazines come out, the twenty-four years' readers of *Mosaics* mean to keep up their sets unbroken, and "will have *Mosaics sure* as long as it is published."

Among the contributions already received are the following:

"The Value of a Settled Policy," by D. Bachrach, Jr.

"Bind your Prints," by J. Wells Champney.

"Be Kind, be Courteous, be Prompt," by A. C. Austin.

"Ralucitrap Eb," by J. S. Masseck.

"Forty Ways to Spoil a Picture," by C. B. Moore.

"Suggestions for Vignetting," by Prof. Karl Klauser.

"A Leaky Skylight and How to Remedy it," by C. P. McDannell.

"The Development of Amateurs," by Thomas Pray, Jr.

"Shadows in Photography," by Rev. W. H. Brubank.

"Points on Pyrogallol Development," by F. M. Spencer.

"My Record," by T. E. Huston.

"Fine Work with Gelatine Plates," by William Bell.

"Photographic Phreaks," by W. H. H. Clark.

"A Good Toning Bath," by W. H. Mowrey.

"Improved Process for Making Bleached Prints," by W. H. Sherman.

And a quantity of others. Please hurry on the rest.

THE HUMOR OF IT.

It is with narrow-souled people as with narrow-necked bottles—the less they have in them the more noise they make in pouring it out.

A New York photographer recently received back a proof from a customer who sent instructions to finish half a dozen pictures with the coat buttoned, and half a

dozen with it unbuttoned. This is a specimen of the kind of things photographers generally have to put up with.

HARD WORK.—Physician (to patient)—"You are suffering from nervous prostration, sir. Have you been drinking heavily of late?"

Patient—"No, sir."

Physician—"Business matters trouble you to-day?"

Patient—"No, sir; I wasn't at the office at all. I've been having my baby's photograph taken."

TWO BRUTES.—Magistrate—"What is the charge against this man?"

Officer—"He threw a photograph lens at a baby and cut its head."

Magistrate—"Are you a regular photographer?"

Prisoner—"Yes, your honor. I had been trying for two mortal hours to take a picture of that little imp—I mean little baby, your honor—and—"

Magistrate—"You are discharged. I used to be a photographer myself."

Prisoner.—"Thank you, sir, your honor."

Editor's Table.

REMOVAL.—Messrs. ROBERTS & FELLOWS, the able printers to the PHILADELPHIA PHOTOGRAPHER, manufacturers of lantern-slides, general printers for the trade, and landscape photographers, have removed from No. 1125 Chestnut Street to newer and better quarters at No. 1305 Arch Street, Philadelphia, where they will be pleased to attend to all friends, old and new. There is no more straightforward firm in existence, and none able to do more excellent work in all the special lines they undertake. Our readers are familiar with the class of work they do and we need only add what pleasure it is for us to commend them.

MR. JOHN E. DUMONT, Rochester, N. Y., whom some admirers of his work dub "the H. P. ROBINSON of America," sends us, with three excellent studies of the Lower Genesee Falls, two lovely field figure pieces, one called "Gossiping" and the other "Eventide." The first is the better. The figures are the same in both—a man, woman, and child, and a scythe. The parties are returning from the field in "Eventide," and in "Gossiping" they halt by the way for the purpose made apparent by both title and composition. The costumes are rustic and in harmony with the titles, but the faces belie and in most cases are too camera-conscious.

IN noting the pictures of Mr. WILL H. FOOTE, Flint, Mich., we forgot to add that his negatives were made with a No. 7 B. Suter lens and on Cramer plates. Moreover, they were printed admirably upon "Eagle" albumen paper.

A NEW CATALOGUE.—Messrs. ALLEN BROS., Detroit, Mich., so well and favorably known as the enterprising agents for the Suter Lenses, have just issued their autumn catalogue. It is a ponderous and splendid affair and possesses some elements entirely new and fresh in the catalogue line. It contains 170 pages larger than our magazine, splendidly illustrated and indexed. The Suter lenses lead, and the engravings of decorated mats (a specialty with ALLEN BROS.) form one of the brightest pictorial features of the whole. With such a catalogue to aid and such a reliable firm to deal with, the patrons of Messrs. Allen Bros. must be "a happy lot."

MESSRS. G. W. WILSON & Co., 2 St. Swithin Street, Aberdeen, Scotland, favor us with their new 120-page catalogue of views in Scotland, and a second one of 80 pages of views in England, together with a list of their large permanent photographs for framing. Buyers of these famous views are assured beforehand of their excellent and pictorial qualities, for the head of the firm has stood at the head of his craft for quite a quarter century, and his sons do follow hard after him. We are promised that our readers shall have another proof of this soon.

MR. E. M. VAN AKEN, Elmira, N. Y., has occupied his new studio, finished so soon after the fire, and his son has favored us with a print from the first negative he made under the new skylight. It is a carefully posed lady in the attitude of reading, and shows method and careful thought throughout.

A CHANGE.—Mr. C. R. THOMPSON has purchased the interest of the veteran Mr. CADWALLADER, of the firm of CADWALLADER & LOOMIS, Parkersburg, W. Va., and now the firm is LOOMIS & THOMPSON. Since the new combination proposes "to turn out nothing but first-class work," they have our sincere best wishes for their prosperity.

MRS. G. W. SITTLER, Springfield, Mo., desires us to announce that she continues to supply the excellent chemicals formerly made by her lamented husband, for printing on silk, satin, linen, and other fabrics, of guaranteed quality. There has been an increased demand for such printing of late, and it will be a real help to have chemicals for the purpose which will "go straight." See Mrs. SITTLER'S advertisement and secure her circular.

CELLULOID.—In the name of all that is beautiful, what advantage can there be in printing photographs upon bricks or celluloid? There is at least no necessity for paying for a patent-right to do it, as there are well-known methods which preclude.

THE constitution and by-laws of the Washington, D. C., Camera Club have been received from Mr. EDGAR RICHARDS, President.

MESSRS. BUCHANAN, BEOMLEY & Co., 1030 Arch St., Philadelphia, have another envelope ready, stuffed with interesting things for all who apply for a set.

TESTIMONIAL.—"Please send Burnet's *Essays*. If they give me as as much pleasure and profit as have your *Quarter Century* and the PHILADELPHIA PHOTOGRAPHER, I shall be well repaid." —H. F. ROBINSON, Phenix, Arizona.

A LOVELY 8 x 10 landscape view has been sent us by Mr. A. C. Austin, Nashua, N. H.,—"A Study on the Nashua River." It is one of the most natural compositions of water, lilies, trees, shaded country-road, grassy banks, and stony foreground, we have seen for a long time. The artist has chosen the light most skilfully too, and made what he justly claims to be "a decidedly Burnet-ian picture." Such a charming effect is worth a whole day of patient watching and working.

BABY PICTURES COME ROLLICKING IN FROM ALL QUARTERS THIS WEEK.—"A Wise Little Man," wearing papa's hat and grand ma's spectacles is from Mr. A. C. AUSTIN, Nashua, N. H. He has thrown down his lettered blocks to take a sideways glance at the *Boston Journal*—hunting advertisements of cameras we reckon! It is a funny bit. From Messrs. HERLOCKER & SCHAAD, Freeport, Ills., is a trio of darlings excellently photographed in every particular—one of a fair-haired lassie with angel eyes, and two of a stray puss among the daisies. All are posed naturally and with care.

PHOTO-MECHANICAL prints of Mr. S. L. STEIN'S prize pictures have been published by Mr. W. C. PAUL, 223 Grand Avenue, Milwaukee. "The Song of the Slave," "The Nubian Fruit-seller," "Maud Muller," and "The Dancing Girl," are all received by us. They are 15 x 19 inches in size on sheets 22 x 28 inches, and are exceedingly well done. We have already given our opinion of them as works of art. Mr. PAUL has preserved all the excellent qualities of the originals, and the photogravures must have a fine sale.

THE Eagle Dry Plate Works were destroyed by fire on September 17th and the watchman burned to death. Already, like a Phenix, the new works are rising. Fortunately a fair stock of plates had just been received by Mr. G. GENNERT, the agent, at 54 E. 10th St., New York, and not much delay in filling orders is likely to occur.

FOLLOW SUIT.—While waiting in his studio, a few days ago, for our turn at an interview with the busy veteran photographer, Mr. G. G. ROCKWOOD, we overheard him say to a lady customer: "I have been making cabinets for $5 a dozen for the past two years, but have made no money. Therefore on October 1st I am going to raise my price to $8 per dozen. I *cannot* reduce the quality of my work, and must take a stride upward in prices." We admire a man who has the pluck to act in this way, and hold up his example to our readers, daring them to follow suit.

THE second number of *Sun and Shade*, just issued, is entitled the October number. The publishers of our picturesque contemporary have wisely decided not to be hampered by the date of issue of the more or less experimental first number, and starting with the present number, will issue regularly hereafter about the 25th of each month. This was made the more neces-

sary by the unexpectedly warm welcome given the first number, its edition being exhausted within a fortnight after publication, necessitating the printing of a second.

The second number outstrips even the first. The supplement plate, a photogravure from Robert C. Minor's oil painting "Evening," is as charming as a landscape as was "The Knitting Girl" as a figure study. A most interesting reproduction to photographers of a portrait negative, of Mr. Edward Atkinson, follows. Posing and lighting are excellent, and the portrait is most effective. Two lovely landscapes, "Bits of the Hudson," are reproduced in photogravure. An interesting plate to theatrical photographers is "The Minuet," a group of four excellently posed full-length figures. A remarkably good architectural plate of a summer residence, printed in colors: reproductions of two etchings by Mr. Otto Bacher, and of some excellent French pictures, including one from this year's *Salon*, make up a most taking number, whose success seems hardly to admit of doubt. Price, 30 cents. Photogravure Co., 853 Broadway, New York.

A Wonderful Detective.—We have just had the pleasure of seeing the perfection of Detective Cameras—the invention of Dr. J. J. Higgins, of this city. The adjustment of the focus; the setting of the shutter; the increase or any variation of rapidity of the exposure, and the insertion of the diaphragm stops are all accomplished by one and the same device, namely, a small external knob. The size of the camera is less than ordinary, and yet carrying within it, out sf the field of view, a dozen 4 x 5 plates. Of this truly wonderful camera much more anon.

Removal,—The office of the *St. Louis and Canadian Photographer* has been removed to No. 3428 Chestnut Street, St. Louis, where, in better quarters, our good friends expect to be happier and to do better for their large clientage. We wish them every success.

Letters on Landscape Photography, by H. P. Robinson.—During the past year the readers of the *Photographic Times* have been regaled and instructed by a series of charming papers with the above caption and by the able author and artist aforementioned. Thanks to the publishers, Scovill Manufacturing Co., these papers have been reprinted in book form and are now before us in a handsome cloth-bound volume, printed on heavy white laid paper, and with all the illustrations enlarged. We cannot say that this enlargement is an improvement, as a great deal of the exquisiteness of the originals has been lost. But they serve a splendid purpose, and every lover of the beautiful will have the book. One of the chief charms of Mr. Robinson's writings is his epigramatic style. Here are one or two examples: "Serious art requires serious tools, and should not be satisfied with less than the best."

"I get through a great deal of work in the time, because I have everything ready, everything cut and dried for use."

"Of all things simple subjects obtain the widest sympathy."

And then, Mr. Robinson is the highest authority in this particular line. Price, $1.50.

We have received from Mr. J. J. Downing, Waynesville, Ohio, some admirable examples of his portrait work. There is a rotundity and richness about it, that is peculiarly excellent. One secret of this is, that he is a portrait painter, and another is that he entered photography only two years ago entirely free from old notions and the rigid style which comes from running in ruts. A *genre* picture called "The Howadji and his friends," represents an Oriental traveler with his dragoman and friends, and is very well done.

The First and Second Generation together.—Mr. E. Long, Quincy, Ills., writes us as follows: "As you see by the heading of this note, I have taken my son, George S. Long, into partnership. He has been my right-hand man for eight years, and has fairly won his position.

"We have to report a lively trade and very encouraging prospects and, what is equally as good, no reduction of prices, and no discount to a living soul for quantity of work.

"I started in to give the *very best* work I could produce on each and every picture, at a fair living price, and this is the result. We are running nine direct solar-cameras and one reflector for very large work."

We congratulate both father and son and wish them continued prosperity.

Quickest Time on Record.—How it was accomplished we do not know, but our London contemporary, *The Photographic News*, issue of September 14th, reached our office on the 22d inst. It would not be due until the 24th, when its compeers came in—but, as a matter of fact, it came more quickly than it ever did before.

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.

For Sale.—A gallery in Lancaster, Pa., with fixtures, etc., which has been established thirty years, with a good trade. Apply to

John E. Snyder,
112 E. King St., Lancaster, Pa.

Now is the time to read good photographic books. Read our advertisements.

A rare chance to purchase a gallery cheap for cash, in a large manufacturing town of 7000 inhabitants. A grand location. For further particulars, address, "Photographer,"
Box 791, Bennington, Vermont.

For Sale.—Photographic gallery; established twenty-eight years. Population 3000. No other photographer in the place. The proprietor wishes to retire. Address,

A. W. Ferguson,
Prescott, Ontario, Canada.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

Wanted.—Reflecting Solar Cameras. Send full particulars.

Buchanan, Bromley & Co.,
Philadelphia.

Wanted.—Good thorough photographer, by October 1st. Man who is up in all branches. Address, Haupt,
Butte City, Montana Ty.

Get Wilson's "Quarter Century in Photography," $4.00.

For Sale.—Fine portable gallery and outfit. For what the outfit cost. Will take good 8 x 10 view outfit in part payment.

E. B. Luce,
Hinckley, Ill.

For Rent.—Photograph gallery, with dwelling attached, will be rented together or separately. Splendid opportunity. Only one artist in town. Population, four thousand. For particulars, address, Mrs. E. Blair,
Mechanicsburg, Pa.

The quickest and best lens for the studio and outside work is Voigtlander & Son's "Extra Rapid Euryscope."

For Sale.—Gallery in Westfield, N. Y. Population 3500. Fitted for large work. Price, including ground-floor photo studio, $800. Write for particulars to W. G. Weatherup,
Westfield, N. Y.

Read the best books. Consult our advertisements.



VIEWS
reprodnced in this popular form, at lowest prices, from prints or negatives.
A. Wittemann,
60 Reade St., N. Y.

Wanted.—A good double stereopticon, complete with views. State lowest cash price.

C. F. Quedort,
Cape May, N. J.

SITTLER'S IMPROVED CHEMICALS,

For printing on Silk, Satin or Linen. Guaranteed to work if directions are followed. Two bottles with full instructions, for $3.00. You can make at least $50.00 out of it.

We print on handkerchiefs, ribbons, scraps of silk and satin for patch-work, hat marks, book marks, banners, etc. They are nice for birthday, holiday, or wedding presents.

We make the following charges which we give for the benefit of the fraternity: Where we have a negative, $1.00 for each print on scarf, handkerchief, etc., customer furnishing goods. Where we have to make a negative, we charge from $2.00 to $2.50, which gives a handsome profit. We dampen and press the work before delivering, as it is nicer.

References: G. Cramer; Mallingkrodt Chemical Works; or Drey & Kahn.

MRS. G. W. SITTLER,
220 & 222 St. Louis St., Springfield, Mo.

The finest portraits in the quickest time are made with Voigtlander & Son's new "Portrait Euryscope."

CARBUTT'S ECLIPSE PLATES.

I have perfect success with your "Eclipse 27 plate" with "Blitz Pulver" and your "Hydrochinon." I can ask nothing better. I shall use your plates altogether in future. I have tried three other makes but had trouble with them all. S. RUFUS MASON,
PURPLE CRANE, NEB., September 14, 1888.

Are you wise not to look into the subject of Photo-engraving? Such work is being demanded by every industry to-day. Study up the Subject and be ready. See advert of Mr. Wilkinson's new book. Post free, $3.00.

TO PHOTOGRAPHERS.

Artistic retouching done by Willarde with Moreno, 4 E. 14th St., New York City. Negatives can be sent and resent any distance with perfect safety. Only those wanting high-class work need address.

For general outside work the "Rapid Euryscope," made exclusively by Voigtlander & Son, is positively unrivalled.

CRAYON
PORTRAITS ON SOLAR ENLARGEMENTS.
BY E. LONG.

Few who have not read this complete little volume can realize what a help it is to the beginner in this line of study. The author has written not from theory, but from long experience, and the ready sale of the second edition of the work bears testimony to its value.

The beautiful study of crayon portraiture is here simplified and made interesting even in the monotonous detail of smoothing and stippling, and new tools for working are introduced which insure a rapid and perfect finish.

The subjects of studio arrangements, position of the artist from a physiological standpoint, etc., together with the varied and intricate details of features, drapery, hair, heard, lace, background, etc., are treated of carefully and concisely.

The work is not so large as to render its perusal tiresome, and the pleasant style in which it is written will interest as well as instruct the reader.

Mailed to any address for fifty cents.

EDWARD L. WILSON,
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Photo-Engraving, Photo-Etching, and Photo-Lithography.
Just ready. Price $3, post-paid.
See advertisement.

WANTED, to make up a file, the PHILADELPHIA PHOTOGRAPHER for Dec. 4, 1887. Fifty cents will be paid for the same, or *Mosaics*, 1888. Please try and oblige. EDWARD L. WILSON,
853 Broadway, New York.

Try Richardson's Glacé Lubricator.

WANTED.—The *live* photographer everywhere, to issue special-rate photo. checks in combination with our *glass tablet photo mounts.* Is new; takes at once.

We mount cabinet size prints for photographers for $1.00 each, transportation paid by us. E. K. TALCOTT, 216 Northampton Street, Boston, Mass.

YOU will get fooled if you buy a burnisher with only 2 cog wheels, thinking it "as good" as SMITH & PATTISON'S Quadruplex Enameler. The Quadruplex is the King of Burnishers.

ADT'S PATENT PRINTING FRAME.—The printing frame of the future. Considering the construction of the Back-board, the Patent Tally, and the Elastic Felt Pad, the Adt Patent Printing Frame is the cheapest and best in the market.

PRICES.

3¼ x 4¼	$0.50	6½ x 8½	$0.75
4 x 5	50	8 x 10	85
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5 x 7	65	13 x 16	2.40
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When made with backs to open lengthways, an additional charge of ten per cent. will be added to the foregoing prices.

Now in stock.

GEORGE MURPHY,
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Photo-Engraving, Photo-Etching, and Photo-Lithography.
Just ready. Price $3, post-paid.
See advertisement.

1878. 1888.
SAMUEL G. NIXON,
Artist,
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Photographic enlargements furnished and finished in Crayon, Ink, or Water Colors.

Send for 1888 reduced Crayon price list. Highly finished work at low prices. Will alter pictures after delivery, if returned.

The "Rapid Euryscope," fifth series in the importers' price-list, yields the most accurate definition with most beautiful and delicate detail of any lens yet produced.

BACK VOLUMES OF PHILADELPHIA PHOTOGRAPHER FOR SALE.—Owing to the recent destruction of my studio by fire, the set being broken, I will sell volumes 2, 3, 4, 9, and 10 complete, volume 8 except number 96, and numbers 78, 121, 122, 123, 171, 182, 190, 261, 257. All in good order. For terms apply to

E. M. VAN AKEN,
Elmira, N. Y.

A HOLLOW stationary burnishing tool will scratch photographs just as quick as a solid one. The Quadruplex Enameler can't scratch, because the burnishing tool rolls with the picture. The Quadruplex is the King of Burnishers.

FOR SALE.

1 Imperial photo press, R. Hoe make, in good order	$25 00
1 7 x 10 Press, good order	10 00
1 12 x 15 Rubber Bath Holder, air-tight top	3 00
1 15 x 19 Rubber Bath Holder, air-tight top	4 00
1 15 x 19 Glass Bath Holder	6 00
1 16 x 20 Glass Bath Holder	6 00
1 Silvering Room Gas Stove	5 00
1 20 x 25 Bath Holder	10 00
1 Circular Rustic Tree Seat	4 00
8 x 10 Printing Frames, each	25
11 x 14 Printing Frames, each	35
14 x 17 Printing Frames, each	50
1 New 11 x 14 Optical Co.'s View Box revolving back, Barnett holder	50 00
1 4 x 5 View lens	3 00
5 x 8 Old Negatives, not retouched, each	1
8 x 10 Old Negatives, not retouched, each	2
1 14 x 17 View Camera, with Plate Holder	8 00

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Try Richardson's Glacé Lubricator.

TO FERROTYPERS.—The Eagle Ferrotype Collodion. Use it for fine effects.

GEORGE MURPHY,
2 Bond St., New York City.

BUY BURNET.

A VERY VALUABLE AND IMPORTANT WORK ON PHOTO-ENGRAVING.

An entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them. It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson).

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed. Price $3.00.

EDWARD L. WILSON, Publisher,
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THE ONLY AND ORIGINAL.

Perforated and Gummed like postage stamps, and the only Stamp Portraits covered by Letters Patent. Issued July 12, 1887.

Having purchased from Kuhn Bros., the Letters Patent covering the manufacture of *Stamp Portraits*, also on the *Apparatus for making the same*, we hereby notify and caution all infringers that legal action will be taken to protect said letters patent.

Send for trade price list.

No less than one hundred made from one subject; for larger orders special prices will be made.



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Territorial Rights and Complete Outfits for sale.

Now is the time to read good photographic books. Read our advertisements.

TALCOTT'S PATENT GLASS MOUNTS.

NASHUA, N. H., March 13, 1888.

E. K. TALCOTT, ESQ.

DEAR SIR: I desire to express my unqualified satisfaction with your very superior Patent Glass Mount. It almost invariably calls forth loud praises for its beauty, brilliancy, and novelty, from all whom I supply, and its undoubted durability makes it a valuable acquisition.

Yours respectfully,
A. C. AUSTIN.

BUY BURNET.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY.—From the title of this book a casual reader would suppose that it was the experiences of a photographer for a quarter of a century; but they would be greatly mistaken, as its second title, "A Collection of Hints on Practical Photography, which forms a Complete Text-Book of the Art," explains what it really is. Mr. Edward L. Wilson, the author and compiler, is well known as a thoroughly practical writer on photography, and his *Quarter of a Century* is a valuable addition to the many other books on the subject he has written and edited. It will be an authoritative encyclopædia for many years to come; we have searched for omissions, but find it a very perfect treatise on the art.—*Trübner's American, European and Oriental Literary Record* (*London, Eng.*).

Try Richardson's Glacé Lubricator.

PROFESSOR W. K. BURTON'S BOOK ON PHOTO-MECHANICAL PRINTING PROCESSES continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated, and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.—*Anthony's Bulletin.*

A PHOTOGRAPH is liable to stop in the burnisher if the tool is stationary, no matter whether it is hollow or solid. It can't stop in the Quadruplex Enameler, because the polishing roller travels faster than the picture and helps it through. The Quadruplex is the King of Burnishers.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

NEW SULPHITE OF SODA (Crystallized).—Price: In 5 pound cans, $1.00, 1 pound cans, 35 cents, ½ pound cans, 25 cents. For sale, wholesale and retail, by

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HANCE'S Ground Glass Substitute makes a splendid backing for window transparencies and glass stereographs. It softens the light wherever used.

A SECOND EDITION

JUST RECEIVED FROM ENGLAND,

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Practical Guide to Photographic and Photo-mechanical Printing Processes.

Price, $1.00.

MARION & Co., Publishers, London.

The well-known author says, "The object of this work is to give practical instructions in the working of all processes which are in actual everyday use at this date."

The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

Copies mailed on receipt of price.

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The "Extra Rapid Euryscope" is *par excellence* the lens for the amateur.

THE PLATINOTYPE for Amateurs; simple to work, and the results artistic and beautiful. Send ten cents for sample landscape and book of instructions. WILLIS & CLEMENTS,
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Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

JUST OUT.—The Stoddard Print Roller, the best in the market. Price, $1.00.

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IT is a pleasure to know that all of the best photographers in the city of PHILADELPHIA are using Three Kings Albumen Paper. Price per dozen, 90 cents; per ream, $32.00; second choice, per ream, $24.00.

BUCHANAN, BROMLEY & Co., Importers,
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TO PHOTOGRAPHIC MERCHANTS.

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GENTLEMEN: We have now opened a *New York Depot* for the benefit of our Eastern patrons. From this depot orders will be delivered to any New York Freight, Express, or Steamboat office. Address M. A. SEED DRY PLATE Co., No. 2 Bond St., New York. A. R. HUISKAMP, Manager.

BUY BURNET.

I HAVE received your Burnet and prize it very highly, as it is a great assistant in the studio. I consider it invaluable to any Photographer or Artist.

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VIOLET LIGHTNING FLASH.—(Brutum Fulmen.) This compound is made by a new formula, and produces the most powerful actinic light yet discovered. It contains neither acid, chlorate of potash, nor animal charcoal. It oxygenizes more rapidly than any flash compound heretofore offered, and may be used on card-board or glass with safety.

Twenty grains is quantum sufficit for an ordinary flash (instead of forty to sixty grains, as stated on our copyrighted directions). According to subject, distance, quality of lens and rapidity of plates used, vary the above quantity. A twenty-grain measuring-cup is sent with every bottle. Handle with care.

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Manufacturers,
Philadelphia, Pa.

Get Wilson's "Quarter Century in Photography," $4.00.

THE PLATINOTYPE for Photographers, Solar Printers, and all Copyists. Platinotypes are permanent, and a license to work the process costs very little. Send ten cents for sample portrait and book of instructions.

WILLIS & CLEMENTS,
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IMPERIAL Negative Reducer, for either dry or wet plates. Manufactured only by GEORGE MURPHY, Sole Proprietor, No. 2 Bond Street, New York. Price per pint bottle, 80 cents.



SEED'S PATENT
VIGNETTERS.

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GENTS: The Seed Vignetters you sent me, I am very much pleased with. They make a perfect vignette, are very easily adjusted, and being perfectly transparent in the centre, allow the negative to print as rapid as a full figure with a plain background. They are a necessity for every printing room, and must soon come into general use.

Yours truly,
ALEX. J. W. COPELIN.

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PIPER, with F. W. Guerin.

To be had from all dealers.
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No charge for advertisements under this head; limited to four lines. Inserted once only, unless by request.

By a first-class operator, printer, and general assistant; seventeen years experience. "Photo" No. 925 Pa. Ave., N. W., Washington, D. C.

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By young man of five years experience as printer, toner, and general assistant. Strictly temperate. Address, T. G., Box 463, Farmington, Maine.

By a first-class German retoucher; good and and steady engagement in a first-class studio. "Artist," care Wm. Leumann, Hotel Deutsches Reich, 9 West St., New York City.

By a young lady who has had several years of experience in a first-class studio in London; as retoucher, attendant, manager, or operator. Is able to conduct a photo-business entirely. Best of references. Miss Bell, care Mrs. Simpson, 104 E. 10th St., N. Y.

By a young man of steady habits, as printer and toner. Ban assist in the dark-room or at retouching. C. A. Hoxie, Pawtucket, R. I.

By a young man who has had some experience in the photograph business, willing to work for a while for a little more than board. "W." Box 624, Orange, Mass.

As retoucher. Can give good satisfaction. Abbie Roberts, Waynesville, O.

In a photo gallery, as artist. I work on crayon, water-colors, oil, pastel, and mineral-portraits, also retouch negatives. I work all but mineral over photos if desired or drawings. Address, "Artist," care Stamp Window, Atlanta, Georgia.

By a first-class printer and toner. Address, Jas. Goodall, Olneyville, R. I.

As printer and toner; by a practical printer of twenty years experience with the best galleries. Steady and reliable and first-class work. C. Von Mœlk, 197 S. Pine St., Indianapolis, Ind.

By a strictly first-class operator. Best of reference from past employers. "Operator," care J. C. Somerville, Photo Stock Dealer, St. Louis, Mo.

Moss Engraving Co.

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Engravings for Books, Newspapers and Circulars

Send Green Stamp for Circular—Send Photograph, Drawing or Print for Estimate.

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Photographic Stockdealers

Sole Agents for the NEW ORTHO-PANACTINIC LENS, Moor's Photographic Enamel, the Perfect Mounting Solution for mounting Photographs on the thinnest mount without wrinkling.

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IMPROVED GELATINE FOR EMULSION.

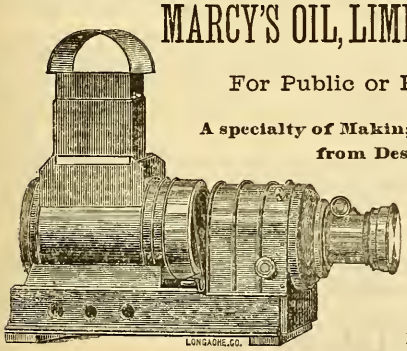
HARD and SOFT QUALITY.

We beg to request our American friends to give us their orders *as soon as possible* for early as well as for forward shipments during the winter or whole year.

We propose regular monthly shipments, *thus ensuring regularity in every respect.* Our new winter make will be of the highest class. A trial is solicited.

Obtainable from the SCOVILL MANUFACTURING CO., and all Dealers in Photographic Materials.

Or from the Manufacturers: F. DRESCHER & CO., Oberndorf-Schweinfurt-on-the-Main, Germany.



MARCY'S OIL, LIME, and ELECTRIC-LIGHT SCIOPTICONS

For Public or Private Use they stand Unrivalled.

A specialty of Making and Coloring Magic-Lantern Slides to order, from Designs, Photographs, or Engravings.

SEND STAMPS FOR CATALOGUE.

L. J. MARCY,

No. 1604 Chestnut Street,
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Mention *Philadelphia Photographer.*

TALCOTT'S PATENT MOUNTS

FOR PHOTOGRAPHS, ETC.

IS NOW MEETING A LONG-FELT NEED.

A unique invention constituting a picture and frame combined, complete for the easel, mantel, or wall, by which all framing may be dispensed with.

Patented March 23, 1886.

The Talcott mount softens the lines, adds much strength and great brilliancy to the picture, preserves the photograph, rendering it practically indestructible. Picture frames are expensive, go out of fashion, and take up room, A picture mounted by our patent mount can be displayed or packed in one-half the space required by a picture with ordinary framing, as by this process all other framing becames wholly unnecessary, yet it is so constructed that, if desired, it can be placed in any ordinary picture frame, intact, and free from all interference.

Our invention relates to mounted pictures, such for instance, as a photograph; the object being so to mount the picture as to dispense with the ordinary picture frame, to preserve the picture, and to secure a richer, stronger, and more brilliant and life-like effect than has been heretofore produced by ordinary modes of mounting, and to afford, when so mounted, means for support and suspension of the same. The transparent plate is of the best quality that can be procured, shaped, and finished to each individual print, which print is securely enclosed and hermetically sealed in a neat and durable manner. The mount is provided with a strong suspension and support, the whole presenting a finish and richness to correspond with any surroundings, however elegant.

We append samples of the many testimonials cheerfully accorded us.

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E. K. Talcott: We have supplied a large number of our customers with Talcott's improved glass mounts, and they have invariably expressed the utmost satisfaction with the same. In our own judgment preservation of photographs these mounts are invaluable.

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Boston, February 25, 1887.

Desiring to test practically the Talcott's Patent Processs of mounting photographs (silver prints), I caused the inventor to mount a choice print for me seven months ago. I am pleased to state, that although the photograph has stood exposed to the full rays of the sun, every day it shows not the slightest trace of deterioration, and continues to be admired by all who see it. The Talcott method decidedly enhances the appearance of silver prints in every way, besides affording an extremely tasteful and elegant style of mount. Wilfred A. French,

Office of Benj. French & Co., 319 Washington St.
Importers and Dealers in Photographic Supplies.

E. K. TALCOTT. *Boston, February 15, 1887.*

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Soule Photo. Co.
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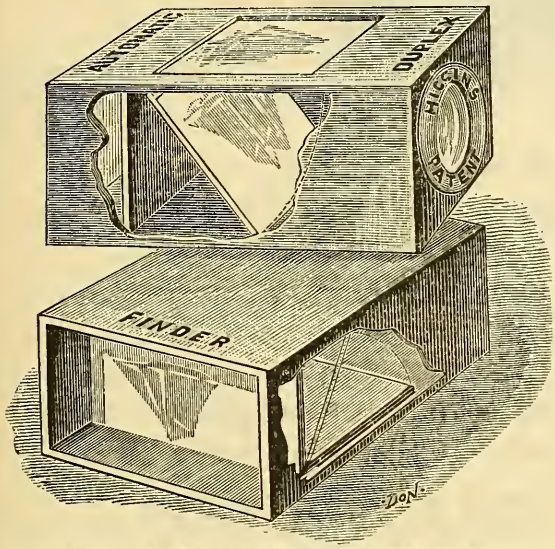
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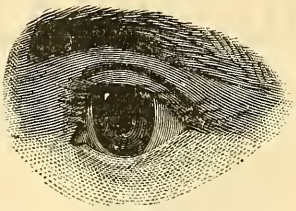
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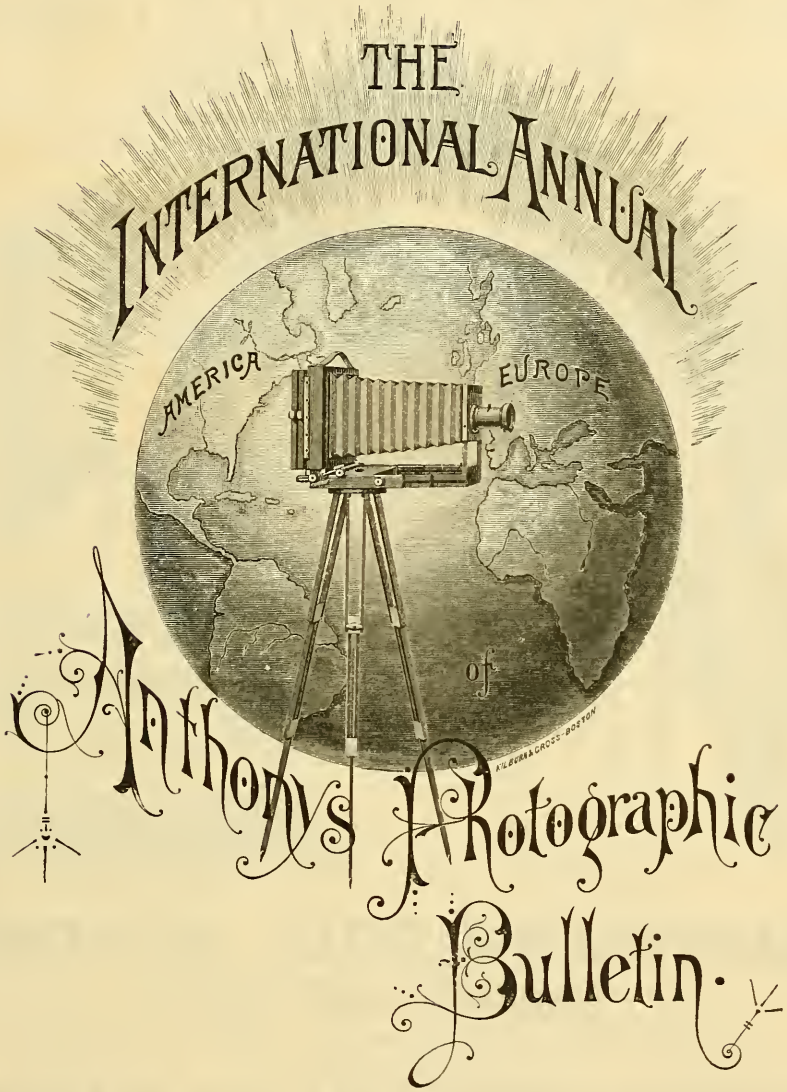
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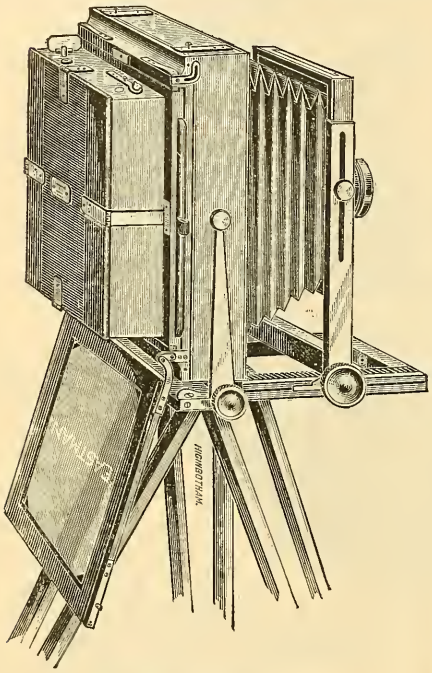
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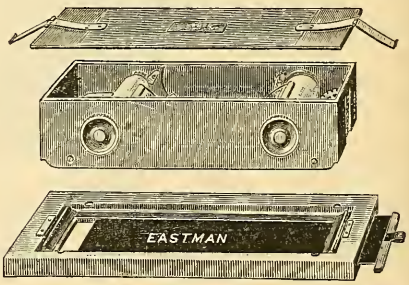
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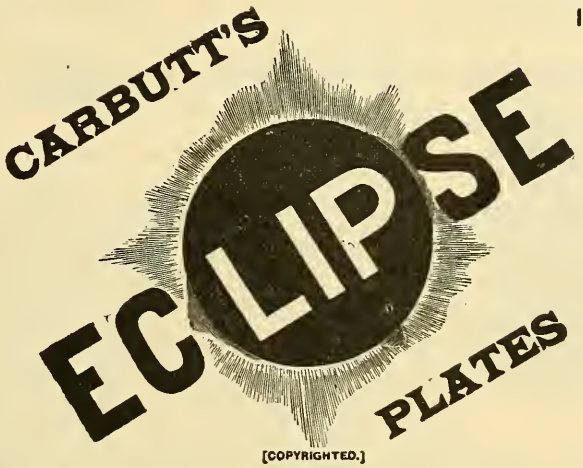
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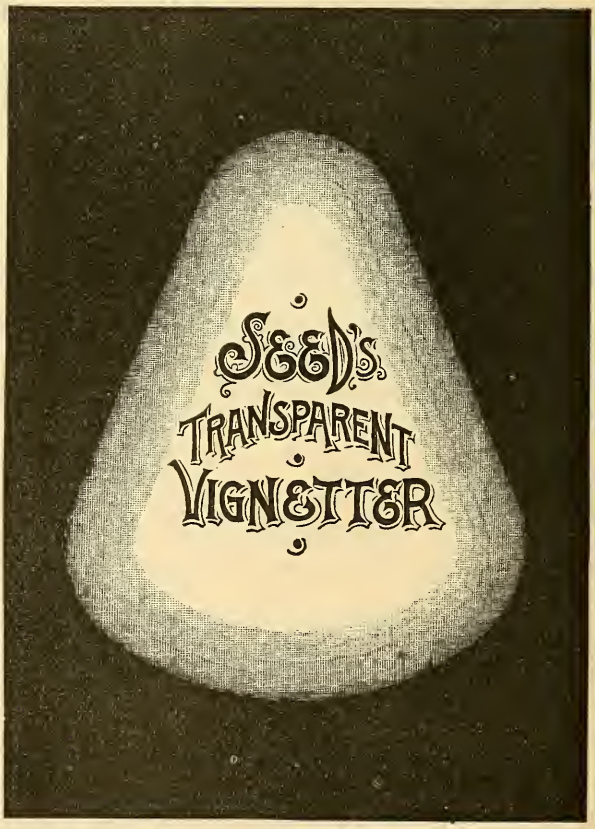
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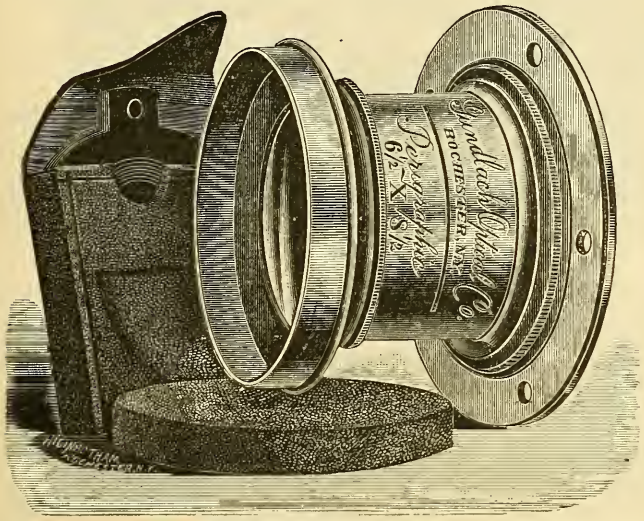
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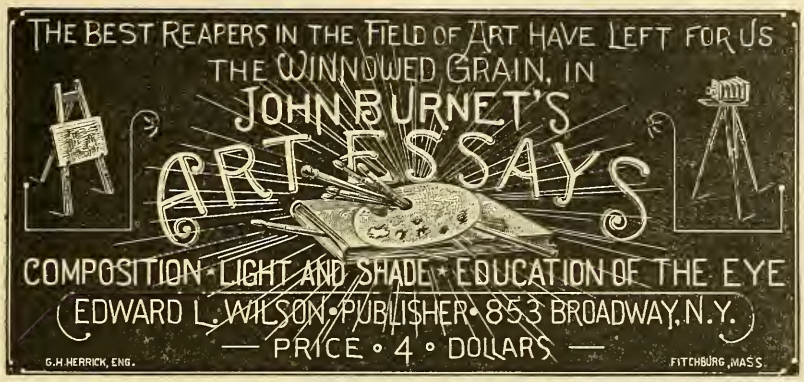
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IX. SCENES FROM MR. DALY'S REVIVAL, "A MIDSUMMER NIGHT'S DREAM."
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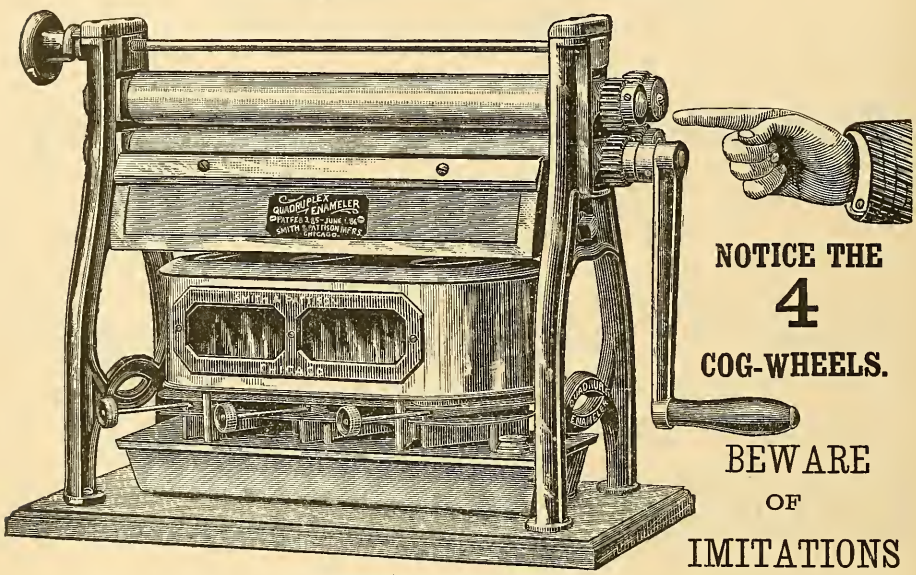
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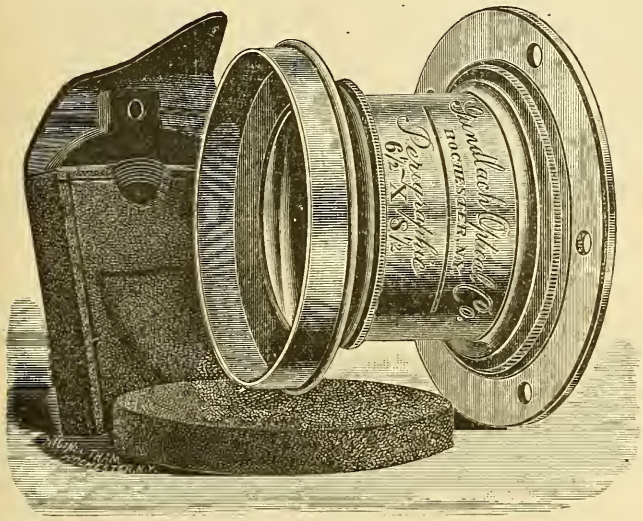
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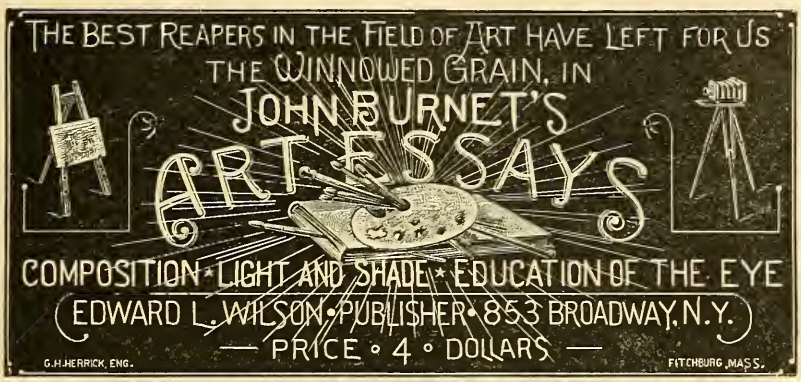
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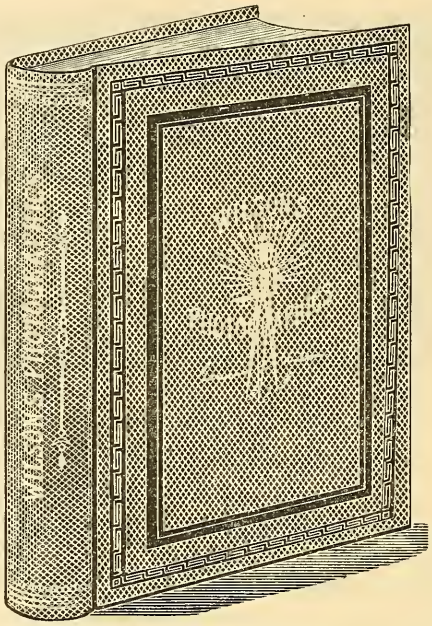
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Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

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SWELLED GELATINE PROCESS OF MAKING PHOTO RELIEF PLATES.*

BY W. T. WILKINSON,
London.

As in the etching methods, so in this, the first consideration is the production of a suitable negative, the lines being represented by clear glass, and the whites by perfect opacity. If there be any veil on the lines, or thinness in the whites, a good result cannot be obtained.

To prepare the gelatine solution, soak four ounces of good gelatine all night in clean cold water, then drain away the superfluous water. Place in a clean vessel, stand this in a pan containing cold water, and place on a fire, or gas stove, gradually raising the temperature until the gelatine is dissolved, then add one-half an ounce of good white sugar and stir well until dissolved, then strain through fine muslin into a pouring cup or small teapot, and proceed to coat glass plates previously cleaned and warmed with as much of the gelatine as they will hold. Place them on a levelled slab to set, and when set either dry them in a current of air or in a calcium box.

The drying operation will be rather a long one, but, as a number of plates may be done at a time it need not cause inconvenience, as the dried films will keep indefinitely.

It will be found a great advantage to use patent plate glass for this purpose, so as to get a perfectly even film.

To sensitize these films, soak them for three minutes in a solution of,

Bichromate of Potash . .	1 ounce.
Water	10 ounces.
Alcohol	6 ounces.

On removal from this solution, drain, then blot upon a pad of clean *old* linen, and stand away to dry in the dark in a closed box at a temperature of between 60° and 70° F.

When dry, expose to light under the negative in direct sunlight; or if sunlight is not available, expose at the bottom of a box (the sides blackened) a little larger than the negative, the box being open to the sky; if the electric light is available use it, but see that the light strikes the negative square.

Expose until the image can be seen clear through the film, then remove from the printing-frame and place in clean cold water until the film has absorbed all the water it will.

Here it will be necessery to have practice to know just how long to soak; if the time given is not sufficient the relief will be low; whilst if too long a time soaking, the lines will be rounded instead of flat. But as it is easier to stop the action too soon than too late, give plenty of time for soaking. After fifteen minutes' soaking in water at 50° F., make an examination and judge of the result.

When sufficiently soaked, remove from the water and blot off the water with a clean soft cloth, then lay in a dish containing methylated spirits of wine, or alcohol, until the plaster is ready for casting.

* Extracted from Photographic Mosaics, 1889.

To prepare the last, pass a sufficient quantity of clean dry plaster of Paris through a fine sieve, then take a basin containing a sufficient quantity of clean water and add the plaster slowly, stirring vigorously until sufficient is mixed to make a paste about the consistency of molasses (in summer, not winter); now remove the relief from the spirits of wine, drain, wipe with a cloth, and lay upon a glass plate larger than the glass plate holding the relief, and surround it with pieces of wood standing half an inch higher than the surface of relief so making a chase; then pour the plaster slowly over the relief and when the chase is full level the top by means of a long-bladed knife. Last, allow the whole to set; when set lift the cast away, and the picture should be clean and free from either air-bells or broken plaster. If any air-bells have formed, the plaster was too thin or poured over too quickly; if the plaster breaks and adheres in patches the plaster was old and rotten. Buy fresh plaster in bulk, put it into a dry earthenware jar, and keep it in a dry place.

The cast being made, the next step is to make a wax mould, which is done by first placing the plaster cast in a dish of water, the water being just deep enough to be about one-eighth of an inch *below* the surface of the cast. As soon as the water penetrates evenly, remove from the dish, place on the bench in a chase, and pour over it some melted wax previously mixed with a small quantity of very fine black lead.

When the wax has set lift it away from the plaster cast, and by means of a conical tool (supplied for the purpose) made hot proceed to build up the whites (this portion requires practice to do properly, and is very difficult to describe by writing), after which it is electrotyped.

For half-tone blocks the dried gelatine films are sensitized in

Bichromate of Potash . .	1 ounce.
Water	15 ounces.
Ferricyanide of Potash . .	240 grains.
Alcohol	5 ounces.

After soaking in this for three minutes, the plate is blotted off by means of a clean old linen rag, then placed on the levelling screws in a Collotype drying-oven,* and dried at a temperature of 150° F.; then exposed under a half-tone negative, until the image shows well through the back, soaked in water until thoroughly swelled, then placed in a solution of tannic acid in methylated spirits of wine and, after soaking in this for five minutes wiped free from the spirit, then the plaster cast made, then the wax mould, and finally the electrotype.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 604.)

Instantaneous Work, Day and Night.

It is much to be desired that a better term than that most indefinite one "Instantaneous" could be discovered or framed, but for the want of a better one I suppose that it will have to be continued in use. It means, of course, a very short space of time, so short that the human mind can but barely grasp it, if at all. But in photography it may mean any space of time from one-half of a second to a thousandth, or even less, if possible. Such short exposures as the latter are claimed to have been made for special purposes, and though curious or scientific, the results have not proven to be in any sense of the word "scientific," and that is what the amateur should always aim at.

What subjects you may ask me are the most suitable for instantaneous work? The first are sea scenes, the breaking of the heavy surf on rocks or beach; the union of sea and clouds, producing charming results. The addition of a ship, some distance out with all sails set, will add much to either of the former. Yachts sailing singly or matched in a race, are to my mind the perfection of an instantaneous picture. It is only such pictures that ever presents to my mind the impression of motion. All others are still; the lens has caught the subject in a state of rest, and so impresses it upon the sensitive plate, though that period of rest has only been a fraction of a second. Still it is at rest. Look at an instantaneous picture of

* See page 167 "Photo-engraving, Etching, and Lithography," by W. T. Wilkinson.—Ed.

a bird flying or a train of cars moving at the rate of sixty miles an hour, and you will bear me out in the statement that still no impression of motion is given. It is still. River scenes, small waterfalls, and the ripple of a small stream over its rocky bottom, are well portrayed. Young children, animals —be they in the state of nature or man's companions, require this kind of work. In landscape work the use of a quick shutter is oftentimes required when the foliage is much disturbed by a sharp wind. The less successful pictures, to my mind, and so often taken, are the aforementioned train of cars and crowds of people in the streets of some busy city. In both of these no impression of motion can be obtained, the cars are at a stand still, and the people are represented in such attitudes that are not pleasant to look at, and unnatural as well, for the eye is not sensitive enough to detect the different positions assumed by people in walking.

For this work you will require a lens of the rapid rectilinear type, the ordinary single landscape lens, as a rule, not being quick enough, though I have seen some fair work produced by them when the exposure required was not too rapid. Plates more sensitive than the landscape, sold under the names of Special, Eclipse, Instantaneous, Extra Rapid, etc., and an instantaneous shutter, an instrument made to fit either on the hood, between the two combinations, or behind the lens, are required for such work. The proper position of the shutter, after considerable discussion, has been at last decided by the majority to be between the two combinations of the glasses forming the lens. Those placed upon the hood of the lens are generally a modification of the well-known drop shutter, and, as a rule, are inexpensive. If used, the aperture of the drop should be much larger than the aperture of the lens, so that more exposure can be given to the plate. But there is a very serious objection to their use. The constant jar given to the lens, especially when rubber bands are used to quicken the action, will in time break up the cement between the glasses, alter their planes, and cause a film of fine balsam dust to form upon their surfaces, which will in a very short time impair the working power of the lens. With the use of those placed behind the lens I have had but little experience, and not very satisfactory at that. Of those placed between the two combinations, I prefer the Prosch improved duplex beyond all others, because I believe it to be constructed upon sound principles, and it has always given me entire satisfaction. Still I would prefer that you would study out this subject for yourself.

For rapidly moving objects it may be well to have a little instrument, to be attached to your camera, called the "finder," to enable you to centre the object upon your plate. Of these there are quite a number in the market. A cheap pocket spy-glass, with its object-glass of the same focal length as your lens, costing but a song, attached temporarily over the lens and camera will answer your purpose fully as well as a more expensive article. By its aid you can always keep the object sharply focussed and just where you want it to appear upon the plate. I have tried a good many finders, but very soon dispensed with them and returned to my spy-glass. Any optician will fix your glass out with the object-glass of required focal length. The mode of use is so simple, that one soon becomes expert in handling it. The camera is focussed sharp at some object forty or fifty feet distant and a mark is made upon the base board of the camera for future use. The spy-glass is then placed upon the top of the camera, the object-glass being exactly over the front combination of glasses of the lens, and the spy glass is then pulled out until the image is also as sharp as seen through the eye-piece or glass as upon the ground-glass. The tube is then also to be marked by drawing a file around it close to the next joint. Sometimes it may be as well to mark each joint of the tube if there are more than two. Having these prominent marks one on the base board of the camera and the other upon the tube of the spy-glass you can dispense with the glass—a good thing when you are sailing in a stiff breeze or a choppy sea—for you have only to draw out both the camera and the glass to the marks and you know that the camera is focussed for such a distance. Should the object appear indistinct or present a want of sharpness through your spy-glass, you

have only to correct that in the glass and then bring your camera into focus by either shoving out or pushing in, till it covers ground, to the alteration made in the length of the tube.

Exposure.—The fraction of a second required for the exposure must, of course, depend upon the character of the subject. A photograph of the sea and sky, with or without ships sailing at a distance, can be taken with a little practice, without the aid of a shutter. By practice the ordinary cap of the lens can be removed and replaced in a fifth of a second (always carry the cap above and not below or to one side of the lens), which is a sufficiently short enough exposure for the subject mentioned. Even trees can be taken without the shutter by cap off and on, provided it is not blowing a gale. With babies, animals, and rapidly moving objects, of course you will want a quick shutter. For these and other objects on land I would advise that you use the lens at full aperture and let the shutter work at a tolerably fast speed. Of course, in climates where the sun shines with great brilliancy a small stop, $\frac{f}{16}$ to $\frac{f}{32}$, should be used. Marine pictures of rapidly moving boats require stops $\frac{f}{16}$ to $\frac{f}{32}$ to prevent over-exposure. Experience will soon teach you as to the speed of the shutter and the size of the stop that will be required for good work.

The taking of pictures on very dark, dull days, and at night especially, was for a long time thought to be nearly impracticable because of the length of time required for the exposure. Gas and kerosene lamps were tried, then the electric light and the magnesium ribbon, but, except in studios supplied with an abundance of reflectors and other accessories, the results were not very satisfactory. The flash-light prepared in Germany (its component parts being kept secret for some time), a compound of magnesium, chlorate of potash, and sulphide of antimony was thought to be the very acme of light for instantaneous photography. But this and all other compounds containing chlorate of potash were soon demonstrated to be extremely dangerous to the operator and others handling them, and also very disagreeable from their acid fumes, and, therefore, required special boxes to obviate the latter objection. Too great care cannot be exercised in handling chlorate of potash in all these mixtures, for it will often explode without the slightest warning.

Notwithstanding the assertion of an editor of a London photographic periodical, made before a photographic society in England three or four years ago, with more gall than truth, that the Americans never invented anything, it was demonstrated by Dr. H. G. Piffard, a distinguished and hard working amateur of the New York society, as a result of his experiments, that by combining finely powdered magnesium either with gun cotton, or gun powder, a perfectly safe and an intensely bright light could be produced and pictures could be taken of sufficient density and good printing powers with ease and certainty. Dr. Piffard's announcement and successfull demonstration before the New York society has stimulated a wonderful activity in the art-science; both amateurs and professionals are striving with all their energy to utilize and enlarge the possibilities laid bare by this process. If it is desired to photograph a single person or a group or an interior, it is only necessary to place the sitters in proper positions or arrange the room, the lens having been properly focussed by the aid of a candle or lamp, reflecting screens in their appropriate places (and you will need them), the illuminant (be it either gun cotton sprinkled with magnesium, the pistol loaded with gun powder and maanesium, or some one of the many preparations now in the market containing these ingredients) all ready, uncap the lens and start the light, and the picture is taken. It is not necessary to put out the lights in the room; turning them down is all that is required, and, in fact, it is better to have some light rather than total darkness when the flash is sprung.

Dr. Piffard's mode of operating was to sprinkle about fifteen grains of magnesium upon a pad of cotton, ordinary photographic, of about six or seven grains, and touch off with a match. The cotton should be carefully pulled apart so as to produce as much surface for the magnesium as possible.

With a pistol he put ten grains of gun powder in a cartridge shell, and on top of the gun powder he put enough magnesium to fill the shell, and confined it with a wad lightly placed. I think that the lens to be used should be a rapid portrait combination with as near a full aperture as can be worked, though any lens that is rapid and will give good definition for groups, etc., can be employed with good results, but full apertures must be used. The illuminant should be placed above the camera, and at an angle with it, and behind the lens, with a screen or reflector to throw the light forward upon the sitters, as mentioned before. Other screens are required to tone down the strong contrasts. Who can tell of the possibilities in the beautiful art-science which this demonstration, simple as it is, has given to us? As yet we have but a faint inkling of them. The end is not yet reached, for a field has been opened which will take years to thoroughly explore and work.

Handling and treatment of very rapid plates. — Very rapid plates require to be handled with a great deal of caution and very careful treatment. If we consider for a moment how they respond to the faintest touch of light, no matter from where it comes, through the lens, a pinhole in the bellows or front board of the camera, though invisible from the outside, through the dark slide or back of the camera, exposed for some time to the direct rays of the sun; that minute ray entering from either of the above-named sources of trouble will be promptly registered upon the plate and cause a fog. Then in the natural sequence of condemnation before examination, the plate is pronounced worthless, though almost as easy to handle as slower plates. Still from their extra sensitiveness they require more attention and care, and greater vigilance should be observed to protect them from the slightest actinic ray. I do not think it fair in attempting to decide on their merits, to subject them to the same treatment as slower plates. For under certain conditions a slow plate will remain clear when a rapid plate will show fog. In order to successfully work a very rapid plate, you should have everything in the best working order. The dark-room well ventilated and roomy, perfectly light-tight. The paper over your window or lantern will in time fade; renew it at the first symptom of being off color. Your dishes and glasses scrupulously clean, your developing solutions fresh, and plenty of clean water. You must not expose the plate to too much diffused light, even if it comes through the much-vaunted ruby, until the development is nearly or entirely completed. Have a cover to fit over your developing tray; lifting it partly off from time to time will enable you to tell how the development is progressing until you can remove it entirely with safety.

Development.—Up to within a comparatively short time it was concluded that very short exposures required strong developer; but a plea for weak developers arose, and, as their advocates increased, the question whether a strong or weak developer should be used in the development of so-called instantaneous exposures came prominently to the front and caused many a wordy battle. Beautiful results were shown on both sides from the hands of veteran workers as proofs of their side of the question. Some have recommended the use of two solutions instead of the combined one, and claim by this method a greater control over the process of development. Others, again, propose soaking the plate in water and then placing it in the combined developer, and, again, some claim that by increasing the temperature of the developer to a constant one of between seventy and eighty degrees Fahrenheit, much benefit is derived. For my own part I believe that the chief cause of failure in obtaining proper results in the development of these plates lies in the want of proper consideration of their extreme sensitiveness, the great care that they require, and the demand that they make for an intelligent, and not a rule-of-thumb handling during the process of development. Young amateurs especially are too apt to be guided by the printed slip which accompanies each box of plates — "take so much of No. 1 and so much of No. 2, mix them and flow over plate, if it comes up too soon, add some bromide." Nothing is said of brains in these slips, so he proceeds to develop his exposure in strict compliance with this cast-iron formula. As a rule, then, most, if not all, of

his exposures are complete disappointments, "and the plates are not good."

But if the development of each plate had been studied intelligently with the desire to know the whys and whynots as these points arose, especially why the high lights came up so fast and thick, and yet the plate when finished was very much under-exposed, a much smaller number of failures would have been scored against him. With these plates especially, it is necessary that you remember the component parts of the developer, and the part which each plays in the development and especially exercise judgment in accordance with the character of the subject in the treatment of the subject. If over-exposed use the usual amount of pyro but a much smaller quantity of the alkali to commence with, and if the action is slow then gradually add more alkali, a few drops at a time, until the image begins to show itself. When beginning with a fresh developer it is well, unless the plate is known to be under-exposed, to add a few drops of bromide solution. With subsequent plates this will not be necessary, for the developer will absorb the bromide from the film of the plates. This is the reason why with each subsequent plate the developer becomes less rapid. I am in the habit of saving my developer after use, and keeping it in an amber-colored bottle with a rubber stopper, and when beginning with a fresh developer I add to it about one-third of its bulk of the old developer. I think that by this process I can better control the development, as it slows it, enables me to see what is wanted, and gives a softer and more even action of the developer upon the plate, a finer deposition of the metallic silver. With the magnesium flash-light exposures it seems to be the best practice to double the alkali over the amount of pyro, with a large proportion of water. If the plate shows tardiness in accumulating strength add more pyro. By this process you are enabled to keep down the strong contrasts which are oftentimes very objectionable. If you have met with failures, and probably you have, do not on that account give up; try again, and give more care and study. Others have succeeded, why should you not? A and B may show you magnificent results, brilliant pictures. Don't despair. They don't exhibit their failures; not they.

(To be continued.)

QUERIES, QUESTIONS, AND CONUNDRUMS.

For a long time, for the more prompt help of our readers, we have caused our stenographer and type-writer to assist us in giving personal answers to queries. The burden grows with the growth of camera-lovers, and we must again fall back on this column to help us out. We issue twice a month, and in ordinary cases that will enable us to give information to the querist in plenty of time. May we desire them to learn to depend upon it? In emergent cases, when requested, we will help quickly by a personal letter.

To Remove Obstreperous Stoppers.—S. K. As cold weather comes on you will be more or less troubled by your stoppers becoming fixed in your bottles. To loosen them, the following method is recommended: Boil some water in a kettle, and while boiling let it pour slowly on the outside of the neck of the bottle, turning it round and round to insure that all the neck gets thoroughly and equally warmed through. The glass of the neck of the bottle all around the stopper is expanded by the heat, and the stopper is bound to be loosened. It would be well to try this on a comparatively worthless bottle first.

If this method will not answer to remove the stopper from a bromine bottle, the only way is to break off the neck and transfer the bromine to another bottle, using *great care* to avoid accidents.

To Drill Holes in Glass.—T. D. H. To drill holes in glass a common steel drill, well made and well tempered, is the best tool. The steel should be forged at a low temperature, so as to be sure not to burn it, and then tempered as hard as possible in a bath of salt water that has been well boiled. Such a drill will go through glass very rapidly if kept well moistened with turpentine in which some camphor has been dissolved. Diluted sulphuric acid is

equally good, if not better. It is stated that at Berlin glass castings for pump-barrels, etc., are drilled, planed, and bored like iron ones, and in the same lathe and machines by the aid of sulphuric acid. A little practice with these different plans will enable the operator to cut and work glass as easily as brass or iron.

To Clean Ground Glass.—T. C. G. Wash it well with soap and soda water, using a nail-brush, to scrub off oily streaks of the fingers, etc., rinse well in tepid water, and do not wipe it or touch it with the hand or cloth until it is dry; afterward handle it with paper or a clean handkerchief. It should be warmed by the fire for ten minutes or dried slowly.

Substitute for Cork.—C. Wells. Yes, rubber is a good substitute for cork for some substances. Likewise a new artificial cork has been made by Potel, a German scientist, from a mixture of glue, glycerine, and tannin. It is elastic, impervious, strong, and durable, and very cheap. The mass is also applicable to other purposes.

Writing on Glass for Lantern Slides.—Campbell Haines. To draw or write on glass the *Scientific American* advises the use of a varnish of sugar. This is made as follows: Dissolve equal parts of white and brown sugar in water to a thin syrup, add alcohol, and apply to hot glass plates. The film dries very rapidly, and furnishes a surface on which it is perfectly easy to write with pen or pencil. The best ink to use is India ink, with sugar added. The drawing can be made permanent by varnishing with a lac or mastic varnish.

Shellac Solution.—"Varnisher" would do better to purchase his varnish of his dealer unless he uses great quantities. A six-ounce bottle varnishes a great many plates.

To make a clear shellac solution, prepare first an alcoholic solution of shellac in the usual way; a little benzole is then added, and the mixture well shaken. In the course of from twenty-four to forty-eight hours the fluid will have separated into two distinct layers, an upper alcoholic stratum, perfectly clear and of a dark red color, and under it a turbid mixture containing the impurities. The clear solution may be decanted or drawn off.

Elastic Mucilage.—C. Wallace. Mucilage made as follows will not "crackle." To twenty parts of alcohol add one part of salicylic acid, three parts of soft soap, and three parts of glycerine. Shake well, and then add a mucilage made of ninety-three parts of gum Arabic and one hundred and eighty parts of water. This is said to keep well, and to be thoroughly elastic.

Collodion instead of Court-plaster.—"Hart" will find plain uniodized collodion very good for keeping air from wounds. We have long used it. Photoxylin, a substance used in Russia by photographers, has been recommended by Prof. Whal, of St. Petersburg, as a substitute for collodion in surgical practice. He states that a five per cent. solution of photoxylin in equal parts of alcohol and ether, when applied to the skin, forms an impervious dressing that adheres firmly, and is not easily rubbed off in washing. In small operations, he has found that the application of this solution makes it possible to dispense entirely with the more bulky antiseptic dressings.

Copying Drawings.—J. Judd. It is not required that you should use the camera for reproducing simple drawings, if you prefer a less neat and more time-taking way. Here it is:

Drawings of apparatus, plans, and indeed of any kind which are not executed in too fine lines, may be readily copied upon any kind of paper in the following manner:

Place the paper upon which the drawing is to be copied securely upon the original, and dampen the paper with a cotton rag saturated with benzol. The latter is absorbed by the pores of the paper, and causes the latter to become as transparent as regular tracing paper, so that the drawing will become distinctly visible through it. The latter may then be traced in the usual manner, either with lead-pencil, or ink, or India ink, or water colors, the benzol offering no resistance to any of these agents. In fact, pencil- or ink-marks applied to paper

saturated with benzol appear to adhere to it much more strongly than to plainer paper, so much so that it is quite difficult to remove even faint pencil marks afterward with the rubber.

If the original is large, only a small section of the paper is dampened with benzol at one time. Should the volatile liquid evaporate before the drawing below the spot has been copied, it is merely necessary to redampen the latter.

When the work is done, the paper is left exposed for a short time, when the benzol will evaporate, leaving paper and drawing as they were before.

It need scarcely be added that only rectified benzol should be used for this purpose.

To Render Corks "Ether-tight."—"Blow-out," why did you not think of this: Corks may be rendered perfectly ether-tight by coating them with a solution prepared from four parts of gelatine, fifty-two parts of boiling water, and one part of ammonium bichromate (added to the filtered gelatine solution) and then exposing them for a few days to the sunlight. An apparatus may be put together with unprepared, sound corks, and the exposed portions of the latter afterwards coated and exposed to sunlight.

The Best Magazine for the "Photo-crank."—An Indiana amateur comes to us with the above immodest conundrum. We answer it in the words of the Philadelphia *Ledger*, as follows:

"The Philadelphia Photographer, now issued semi-monthly by Mr. Edward L. Wilson from his new office, continues without any change in style or make-up, which is another way of saying that it is a bright and useful journal for photographers. Each number is illustrated by some clever specimen of photography or of the engraving arts allied to photography. There is, besides the picture, reading matter devoted solely to photography, of a highly practical character."

To transfer a lithograph or printed picture of any kind to glass, so that it will be visible from both sides.—G. H. Ross. Try the following: Give the warmed glass an even coating of Canada balsam or varnish; place the face of the print on the surface thus prepared, when the varnish is partly dry, but still tacky; smooth it out, and let it stand in a cool place until the varnish sets; then apply water, and with a soft piece of India rubber, or the finger-tips, rub off the paper so as to leave the image on the varnished glass.

To Mount Pictures on Ferrotype Plates.—This will help you to mount vignettes on ferrotype plates: Paper pasted, gummed, or glued on to metal, especially if it has a bright surface, usually comes off on the slightest provocation, leaving the adhesive material on the back of the paper, with a surface bright and slippery as ice. The cheaper description of clock dials are printed on paper and then stuck on zinc, but for years the difficulty was to get the paper and metal to adhere. It is, however, said to be now overcome by dipping the metal into a strong and hot solution of washing soda, afterward scrubbing perfectly dry with a clean rag. Onion juice is then applied to the surface of the metal, and the label pasted and fixed in the ordinary way. It is said to be almost impossible to separate paper and metal thus joined. Probably metal show-tablets might be successfully treated in the same manner.

Strength of the Sodas.—B. B. says: "I have had a little discussion about the relative strength of sulphite of soda and carbonate of soda in crystals and granulated, and the druggist here cannot help me, and I did not know but what you would. Are both of the chemicals mentioned twice the strength when in the granular form? If you will answer the above you will oblige many."

Messrs. Charles Cooper & Co., Photo-Chemists, New York, answer as follows:

"One pound of sodium carbonate, fine, represents in strength two and a half pounds ordinary crystallized carbonate soda (the ordinary grocer's washing soda).

"One pound of granulated sulphite soda represents in strength two pounds crystals sulphite soda. The difference in both being water of crystallization."

[*Translated for the Philadelphia Photographer.*]

ON HYDROQUINONE DEVELOPMENT.

BY M. E. ANDRA.

I HAVE endeavored to apply to hydroquinone development the mode of proceeding pointed out by me some years ago for development with pyrogallic acid, that is to say, to immerse successively the plate in two separate solutions, one of hydroquinone dissolved in a solution of sulphite, the other in an alkaline carbonate; but the result did not answer my expectation, the image came up gray, slowly, and without vigor. I, therefore, abandoned this method; but my experiments were not lost, for in studying this method I found another, or, to speak more exactly, I found a process by means of which it is possible to develop, *simultaneously*, three clichés at least with a single bath, and which gives a quality of cliché vastly superior, in my opinion, to that obtained in the ordinary manner.

Here is my mode of operating: I place in a dish the quantity of hydroquinone bath necessary to cover the plate well, the bath being made according to any of the good formulas, a little more or a little less concentrated does not matter; then I watch the coming up of the image; as soon as I perceive the slightest trace of the high lights, that is to say of the blacks of the cliché, I remove the plate from the bath and place it in an empty dish, which I cover to avoid the rays of light, and put into my bath the second plate to be developed; then, as the preceding one, I also remove it as soon as I see the least trace of the image, place it in another empty dish which I also cover, and I proceed to the development of the third plate. Uncovering now my first plate, I find it more or less completely developed; sometimes it only needs to be washed and fixed, or else it lacks a little intensity, and I substitute it in the developer for the third plate, which now takes the place of the first in the empty dish. An immersion of a few moments is sufficient to renew the provision of the developer in the gelatine film; I again witdraw it so as to allow the action to continue. My three plates are thus developed simultaneously, after having simply passed through the bath, instead of being allowed to remain in it. The worst that can happen is to be forced to pass them a second or even a third time, but always for a short lapse of time, to allow the development afterward to take place in the open air by means alone of the quantity of the developer confined in the gelatine film. I find in this method several important advantages:

1. The rapid development of three plates at least in the time ordinarily necessary to develop a single plate.

2. The image is much less hard than with the usual mode of development, the cliché has more softness and harmony, qualities most often wanting, in my opinion, in the hydroquinone development.

3. Finally, a much less tendency of the film to becoming yellow, coloration which is liable to occur when the development is prolonged.

I do not hesitate, therefore, to recommend this little dodge to my colleagues. It has the advantage of not being complicated.—*Bulletin de la Société Francaise de Photographie.*

THE POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 583.)

The Use of Arrow Root, Algein, and Salted Papers.

These papers are used in the same way as albumen paper, but here the many cautions needful with thick albumen are omitted. Therefore, the following is to be observed:

1. The silver bath should be 1 : 8, and made weakly acid by the addition of a few drops of nitric acid. Old silver baths often used for albumen paper, must *not* be used for sensitizing these papers.

2. The pictures need not be printed so strongly as albumen pictures, since they lose less in the shorter toning and fixing.

3. The floating time should not be over one minute, since the sinking in of the picture would thereby be hindered.

4. The toning, because it is much easier,

is to be done with a very weak gold bath; the fixing is the same as in the albumen paper, only it is shorter.

5. Whoever wishes particularly strong copies should fume the silvered paper before the copying, for some minutes, with ammonia.

6. The washing before the toning, as after the fixing, must be shorter, since one side of the picture layer is easily injured, and on the other side the washing is done more easily.

Working the Residue.

Davanne has made in his time an assertion, approximating the amounts of silver which the photographer brings to his silver baths and uses in the further course of his operations. There should be contained:

1. Seven per cent. in the dripping papers, the filter, the cuttings of the papers, and the paper fragments with which drops have been wiped away.

2. Fifty to fifty-five per cent. in the wash waters, which are used after the exposure of the papers before the toning.

3. Thirty to thirty-five per cent. in the fixing bath.

4. Five per cent. in the wash waters after the fixing, and only three per cent. remaining in the finished pictures. The photographer can get back the greater part of this silver, however, though it does not always happen to be as reasonably accounted for as that designated under 2.

The Working of the Waste Paper Containing Silver.

The papers represented under 1 must be reduced to ashes, these carefully collected and smelted together with thirty per cent. calcined soda and twenty-five per cent. of quartz sand or glass, in a smelting crucible.

Dr. Stolze recommends that these dripping papers and unfixed papers be simply fixed in the old fixing bath. The fixed waste papers, according to his method, should be well soaked in a concentrated nitric solution and then allowed to dry. They can then be burnt to ashes very easily by lighting them, since they will continue to burn faintly without any supply of air being necessary. The ashes obtained are to be covered with water, to which five per cent. English sulphuric acid has been added; thereby the largest part of the ashes is dissolved while the silver remains undissolved. Now it must be filtered, washed well, and treated with nitric acid. By this means the silver is separated or dissolved while the gold remains undissolved, and this, after the washing and filtering, can, by aqua regia, be recovered as chloride of gold. The nitrate of silver solution will be precipitated by carbonate of soda, and the washed precipitate may be taken up again with the nitric acid, as described above.

Working of the Wash Water.

The wash water described under 2 contains nitrate of silver, carbonate of silver, and a little of chloride of silver. Ordinarily both the first wash waters of each series of pictures are gathered into a cask and the silver contained therein is precipitated as chloride with common salt, or better still, with muriatic acid.

The chloride is attached to the bottom. The clear water standing over is taken off after twenty-four hours, and fresh wash water added. When enough chloride slime has been collected in this way in the cask, it is filtered through a paper or cloth, well washed, and dried out thoroughly. To change this into metallic silver different methods can be used.

Most commonly it is smelted with fifty to seventy per cent. of chalk and four per cent. of charcoal powder in a Hessian crucible. In this case, to avoid any loss of silver, the vessel should be previously well rubbed with chalk, so that the silver globules will not enter into the sides of the crucible. For smaller quantities of chloride, Mohr recommends a quantity of one part chloride with one-third of carbonate of soda free from water. Put in a medicine bottle and heat in a sand bath until red-hot. Dissolving the smelted material in water, the silver is found finely distributed. In the open crucible, smelted together with alkaloid carbonates, the working and spattering is generally violent. A layer of borax should, therefore, be laid over it.

Mohr also recommends the reduction with colophony. The chloride must be mixed with one-third of colophony, heated so long as combustible gases escape, in the open vessel, then the borax added and heated more until the perfect melting together of the silver.

The reduction of the silver can also be affected from the chloride acidified with muriatic acid, in the wet manner, by means of iron or zinc strips. The silver deposits as a spongy precipitate. This silver sponge must then be thoroughly washed many times with hot water containing muriatic acid, so as to remove all iron or zinc. According to other methods, the chloride is boiled with an alkaline solution of hyposulphite of soda, made so by the addition of sal ammoniac. Then the silver in the fungous condition should separate itself. More to the purpose is the following method recommended by Dr. Stolze, which makes smelting superfluous and furnishes nitrate of silver direct. The wash waters gathered together are precipitated not with common salt but with soda. The silver salt then comes down as carbonate of silver. The precipitate of carbonate of silver is deposited, just as with the chloride, finally brought to a filter, washed well, and then carefully put into a dish with nitric acid, added the last thing by drops, until the whole precipitate is dissolved again. A small part of this which contains chloride will not be dissolved, but must be filtered off. Care must be taken not to have too great an excess of nitric acid. The solution of nitrate of silver obtained is evaporated to dryness, or is tetrated and placed with corresponding addition of water under neutralization with double carbonate of soda, to the ordinary standard of the silver bath. It is to be remarked that in all cases where the paper was salted with chloride of ammonium, the wash water also contains nitrate of ammonia, which has a certain quantity of silver in solution. One would, therefore, do well to test the solution standing clear over the carbonate of silver oxide with muriatic acid, and, in case an important quantity is present, to work the drawn off clear solution with muriatic acid for chloride.

The Working of the Fixing Baths.

The first wash water after the fixing comes also under this head. The best method of working these is the reduction with zinc plates. The silver is precipitated as gray, hard precipitate, which in part clings to the plates, and must be brushed off. The reduction is finished with sufficient quantity of zinc plate in forty-eight to sixty hours. The separated silver fungus must be well washed by repeated settling and then stirring up with fresh water, and then either dried in order to melt it down or dissolved with nitric acid. In the former case it must be melted with an equal weight of powdered potash, nitre, with the addition of iron filings. In the same way can be treated the sulphide of silver precipitated with liver of sulphur, after the removal, in part at least, of the sulphur by roasting. For the purpose, as flat a graphite crucible lid as is possible is taken and laid upon a tripod of iron, and underneath a wood charcoal fire is made. As soon as the matter begins to glow the vapors of sulphuric acid are given out. It must be stirred diligently with an iron rod, and the heating continued until no more sulphuric acid escapes. The sulphate of silver then forms a hard brownish material which must be pounded and pulverized. Now is mixed

Sulphate of Silver . .	1 part.
Carbonate of Sodium . .	2 parts.
Ground Glass . . .	1 part.
Iron Filings	½ "

The whole is smelted in a Hessian crucible, the sides of which must be carefully rubbed with chalk. All the time it must be diligently stirred with the iron rod. Kruger recommends a good method for the melting out. It is dearer, but otherwise it is convenient, particularly for small quantities of residue. One part raw tartar and one part raw saltpetre are mixed with one part dry residue, and the matter heated in an earthen vessel. This burns gradually until the reduction of the silver to small metallic drops; by use of water the latter can easily be obtained. If the ashes of paper clippings are to be used in this way, then one part residue, one-half part tartar, and two parts saltpetre must be taken.

Just as good and a simpler method is given by Dr. Stolze, which is to treat the silver sponge with raw nitric acid. With moderate heating it is almost dissolved, only a small, insoluble, black residue remaing when gold is contained in the sponge and when the zinc happens to be impure. This is separated from the fluid and dissolved in aqua regia to get the chloride of gold. The nitrate of silver solution is mixed with carbonate of sodium until a precipitate comes down and is then filtered. The precipitate must be carefully dissolved in pure nitric acid, as stated before.

Working of the Gold Residue.

Gold residues are frequent with those photographers who occasionally make fresh gold baths. For the rest, the first wash water after toning is taken with the old gold baths. The collected gold baths are precipitated by the addition of some iron vitriol and a little muriatic acid, and the gold fungus filtered. This is finally washed, dried, and melted together with the same quantity of pure calcined soda and half the weight of sand or glass. The gold is brought down by oxalic acid. In place of the iron vitriol, Reynolds prefers the use of hydric superoxide. From the weak acid solution the gold is precipitated in fine metallic spangles, and from neutral solutions as a brown precipitate.

USE OF CARBONATE OF SODIUM FOR THE PRESERVATION OF SILVERED ALBUMEN PAPER.

BY G. W. WEBSTER.

The use of carbonate of sodium for the preservation of silvered paper, which Leyendecker recommended many years ago, appears to have been quite forgotten, and to my knowledge, there is no method which was better for this purpose than the use of blotting-paper impregnated with carbonate of sodium. The process is very simple. First dissolve 500 grammes common washing soda in 2 litres of boiling water; when this is cool, dip the blotting-paper in it, let it drip, and lay the sheets in a pile upon one another, each time laying between the two wet sheets a sheet of dry blotting-paper. The latter is done so as to have the paper only just so wet as is really necessary, since very wet porous paper falls to pieces when lifted. The paper is then hung up in a safe place and then dried out thoroughly near a stove and then kept. This is then the so-called soda paper.

This can be used either for the keeping of silvered paper, which must be prepared a longer time before use, or in printing itself, so as to give to the silvered paper, when it must remain for about a day in the printing frame, a clear tone. In the former case, the dry silvered paper is rolled together with the soda paper, or else kept in close contact with it; for instance, a sheet of soda and a sheet of albumen paper are laid alternately in a printing-frame, and finished as if a negative were to be printed. To keep the silvered paper white, if it should have to remain one or more days, in hot weather, in the printing-frame, it is only necessary to use the ordinary layer of felt with the soda paper. The working is very rapid.

After frequent use in the printing-frame the soda paper becomes colored; then it must be thrown away and new added. This is only necessary about once a month if the paper is used continually, otherwise it keeps much longer. Some operators assert that this soda paper layer destroys the varnish of the negative; I have never noticed this myself, but will not let the objection go unmentioned.—*Photo. News.*

[*Translated for the Philadelphia Photographer.*]

THROUGH SMALL APERTURES.

BY A. MIETHE.

We have, up to the present, assumed in our experiments that the kind of light, which the object to be copied emits, is equivalent to the gradation thereof. Since, however, the binding arc of the angular diameter is not only a function of the diameter of the small opening, but also of the wave length of the light, therefore the size of the binding arc must change for each kind of light; and, besides, a certain

opening which allows the least obtuseness for a fixed wave length cannot in equal remaining gradating lengths, furnish this for each wave length. Should we, therefore, be exhaustive, we must settle the minimum obtuseness for a whole number of wave lengths. We will then see how the results obtained can be valued. Instead, then, as in the first part of our essay, of proceeding with a medium wave-length (0.00055) in the Fraunhofer-Schwerdt formula, we obtain the calculation from the wave lengths corresponding to the following spectral line:

Green . . .	E	0.000527
Blue . . .	F	0.000486
	G	0.000431
Violet . . .	H_2	0.000393
Ultra-violet .	P	0.000329
	R	0 000309

Thus we obtain the following values, which, as classified in the first table, represent the minimum obtuseness:

I. for E.

ϕ	5 mm.
0.6	0.3054
0.4	0.2081
0.2	0.1161
0.1	0.0822
0.08	0.0803

It is seen that for different wave lengths with equal gradation the most favorable openings are not equal. Since now, in our tables, the argument ϕ proceeds at rather great intervals, thus it is clear, that the true minimum values are not contained therein, and they can only be very faultily derived therefrom by interpolation; practically, however, this has not the least significance, since an exact measure of the opening diameter cannot be derived from it.

In Nature, as is known, there is found no monochromatic light, therefore, if we make a photographic picture, we have to do it always with mixed light, and we can generally say that rays of all wave lengths are dispersed throughout the outer world, just as in the solar spectrum. Then we scarcely have opportunity to bring to a minimum the size of the general obtuseness, through choice of different openings from picture to picture.

It is quite otherwise, though, if we use different photographic materials. The single preparations are, as is known, sensitive for very different wave lengths, and that kind of difference exists between different kinds of bromide of silver, that we can easily prove, that they must furnish, under otherwise equal circumstances, different inaccurate pictures. It is practically known that to characterize the spectrographic properties of a substance, the photographic effects are construed as ordinate, and the wave lengths as abscissa curves. Now if the ordinate values are expressed in the same units for the previously calculated wave lengths, and these numbers laid by as weights to the corresponding minimum values of the obtuseness (or inaccuracy), then, according to the usual rule of mechanical quadratics, a number is found for each length of removal that may constitute the characteristic minimum value of the material in question.

I have ascertained this calculation for three photographic preparations, the spectrographic properties of which are expressed by the following numbers:

Bromide of Silver Collodion.

E = 0	H_2 = 5
F = 0	P = 0
G = 20	R = 0

Bromide of Silver Gelatine.

E = 1	H_2 = 10
F = 6	P = 3
G = 20	R = 1

Eosin Bromide Collodion.

E = 20	H_2 = 1
F = 5	P = 0
G = 15	R = 0

With these figures I obtained the calculation for the kinds of plates, giving the following characteristic obtuseness:

Drawer	Brom. Col.	Brom. Gel.	Br. Eosin C.
5 mm.	0.0707	0.0714	0.0770
10 "	0.1014	0.1016	0.1089
20 "	0.1514	0.1515	0.1600
40 "	0.2023	0.2030	0.2180
80 "	0.3027	0.3030	0.3157
160 "	0.4057	0.4058	0.4460

All previously obtained results refer to parallel light rays. At a less distance of the point to be copied and with diverging light clusters, the obtuseness is conceivably larger. For instance, let N represent the distance of the point to be copied, and n the drawer length, then must we substitute in the above data for the value ϕ a value ϕ^1, which makes the equation $\phi = \phi^1 \frac{N-n}{N}$.

THE WORLD'S PHOTOGRAPHY FOCUSSED.

The *Berliner-Börzen-Courier* writes us concerning the visit of the German Emperor to the Copenhagen Exhibition:

As the Emperor was returning from his walk through the Exhibition and ascended the staircase which connected the two exhibition-rooms, there were levelled upon him, without regard, the glasses of a whole battery of photographic apparatus. Photography just there and then so extensively used, and development carried on with such eager haste, play an important and distinct part in the brilliant journey of our Emperor through the northern residences. An excellent photograph was taken on board the "Hohenzollern," and so the very sun itself becomes the truest historiographer of the Emperor's journey. The story of the journey, described photographically, and thus most truly and faithfully by means of the sun's rays, has been made public. To this will belong also the sketches and pictures of the painters who accompanied the Emperor's retinue. But above all, wherever the Emperor passed by, or his retinue made a halt, there was a general summons of photographers to the place, while in other boats all kinds of photographic apparatus were found in the most advanced stage of technique. Yet never, since we have taken pictures with the sun, has an event been so fully photographed, nor the glasses of photographic apparatus been applied to so many lands and so many cities as in this journey of the Emperor. So the North Sea journey of Kaiser Wilhelm will form a very interesting episode in the history of photography.

Here in Copenhagen particularly were the cameras of photographers in great demand. They met us on approaching steamers, sail-boats, and row-boats, and were stretched out in a line on the landing-places and in the reception-pavilions, and even in the windows and balconies of the streets, where the equipage must pass. By means of the new photographic technique the difficulty occasioned by the wet weather and the rapid movement was easily overcome. To-day, we photograph the ball in its flight and the lightning in its descent.

Of late it is certainly less difficult than the reporter believes, although it does not happen to every observer to get so interesting a flash as Prof. Kayser did.

As popular as photography has become, yet there prevail in it many great errors. Thus the *Wochenschrift* makes the following notice: "Prof. Kayser, of Berlin, who some years ago took some excellent lightning photos from the roof of the Physical Institute at Berlin, and which were reported at the session of the mathematical and scientific class of the Berlin Academy, has lately photographed a rainbow. He did this from the Rigikùlm as a means of precaution, and used a colored azalin plate. The photographic picture of a rainbow is, therefore, of great interest, because it was previously thought to be impossible to get; the opinion was that a rainbow emitted no rays to produce an effect upon the photographic plate. This idea has now been confuted, and it has been ascertained, besides, that colored phenomena permit a photographic picture too, although not much has been done in this respect yet.

That Prof. Kayser has photographed a rainbow, we know. The fact is, however, not new. We announced it a year ago. The assertion only is new that in the general opinion the rainbow possessed no photographic effective rays. Every professional man knows that the rainbow contains blue and violet rays and their strong effect upon photo-plates.

Still more comical is the assertion in the last sentence "That colored phenomena permit a photographic picture also, although not much has been done in this way as yet."

The writer of this seems to know nothing

of photographs taken from oil-portraits which for years have been circulated, and still less of color-sensitive plates with which a great deal has already been done.—*Photo. Mitt.*

Regarding Hydrochinon Developer. —The production of this developer in only one solution and in durable form can be done best in the following way, according to Baltin: Hydrochinon, 5 grammes; water, 900 c.cm. Dissolve completely by shaking, then add: sodium sulphate 40 grammes, and when this is thoroughly dissolved, add 75 grammes of potash. The developer can be set cold, and by use of aqueduct water it keeps clear for a long time in an uncorked bottle.—D. R.

Photography and Crime. — Photography is gaining increasing importance in the criminal courts. With its help a Berlin merchant was lately convicted of crooked ways in keeping his accounts. The slightest difference in color and shade of inks is made manifest in the photographic copy; blue inks appear nearly white, brown inks, on the contrary, almost black. The books of the accused were submitted to a photographer, who took off the pages concerned, and brought into court the most undoubted ocular proofs of the illegitimate after-entry of some of the accounts. A subsequent chemical test substantiated this evidence. The photographic is to be preferred to the chemical test, because it brings its proofs into the courts, and submits them to inspection, at the same time leaving the document under examination unharmed; while tne results of a chemical test must be taken on the evidence of the chemist alone, and the writing examined is perhaps destroyed. In another case, similar to the above, the changing of the date of a note by an insignificant erasure and addition was proved by means of photography.—*Science News.*

By means of the magnesium flash-light, a photograph has been taken, at the suggestion of M. Du Bois-Reymond, of a normal eye, life size, after a quarter of an hour's rest in a completely darkened room, showing the pupil of the eye fully dilated, as its reaction does not begin until after exposure. Hitherto the effect of complete darkness on the pupil could only be observed, it is said, by the light of the electric spark, but these photographs permit of measurements.

A photographer in New York, who makes a specialty of taking pictures of deceased persons, is said to have made a small fortune thereby—a substantial reward that all still-life artists do not meet with.

One of the most acceptable gifts to send to a friend in another city is a photograph of your pretty room or rooms, the cosy corner, especially, where you have gathered your pretty treasures, or the place where you live and work. One received in this city, the other day, of a beautiful morning room in New York, had conspicuously on the mantel shelf, a panel portrait of the Philadelphian to whom it was sent. It was a graceful compliment, showing that the original was surrounded with all manner of pretty bits from travel. In the flash-light photograph, which gives the lighted lamps perfectly in a library or drawing room, yon can have yourself in one corner—that is a pleasant surprise, too. But if you take the picture yourself it will generally be of the room and of somebody else. A family or friends that are somewhat scattered can keep themselves not only in mind but almost in view by the room photographs of each other, and there is usually something of the owner's spirit—more in the picture than meets the eye; so that it carries its own messages and tells its own story. The *Household* is very fond of photographs of pretty rooms.

New Use for the Flash-light.—A Connecticut Yankee suggests the use of flash-light photography as a means of protecting bank vaults from burglars. He says: "I would have a camera placed in a position where it would command in the field of the lens a space of ten feet square or more in front of the door of the vault, and have the other apparatus so arranged that as soon as tampering with the vault door was attempted the whole would be placed in operation. My plan would of course include retaining the burglar alarm connecting with police headquarters. As soon as

the burglars had begun operations the police would be alarmed, and at the same instant a picture of the men would be made by the camera and flash-light combined, so that even if the men escaped the police they would leave behind them evidence which would very probably eventually result in their detection."

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

BY THOS. PRAY, JR.
Boston.

FOR PROFESSIONAL AND AMATEUR.

WHEN people are in any kind of trouble there is a grim satisfaction in having company, like the case of the boy who if licked could still make faces.

So as the summer vacation has ended, I find by my correspondence that the study of the PHILADELPHIA PHOTOGRAPHER has increased in both branches of our growing family, and professionals as well as amateurs are now studying for profit much of the matter written for the guidance of the younger members, and, profiting by points, are now experimenting on new lines.

That these inquiries come from the studio of the portrait photographer, as well as from the camp of the "Tramp 5 x 8," and from Australia, or Maine, only proves the correstness of my assertion of some months ago, that the circle of *P. P.'s* readers was certainly widening, and becoming more and more interested as they progressed in their readings.

The points brought up or out are numerous and will bear rereading or rewriting so long as of general interest, and as from different standpoints, and the combinations are new.

The developer is still an important point, and how to make and use it is one of the most vital of all the beautiful chemical or optical points of the whole process of making a silver print, plate and all, complete.

It is pleasant to find that plate makers, after years of departure from "Sal Soda," using all the alkalies, come back to their "first love" with a passion born of necessity and a unanimity that is quite as remarkable as was their lack of it only a few months ago. At the stockdealers' show, under the auspices of the Photographers' Association of America, lately held, we find Mr. John Carbutt reading a paper in which he strikes out square for carbonate of soda as the most reliable of the alkalies for the finest work, viz., "portrait photography;" and he further cites the fact that he prefers it "especially in summer time." Why so? because in summer time the change in temperature changes the strength of solutions, and soda remains more constant. Mr. C. does not say this, but he does give good, sound advice when he advises the use of Baume's hydrometer, and the making up of solutions of different strengths for development of different subjects. [See Scientific Development, etc., p. 494, PHILADELPHIA PHOTOGRAPHER, Aug. 18, 1888.]

If you take a strong solution of any alkali and a fast plate, such as most studios use nowadays, you lose exactly what you are working for, *i. e.*, contrast and harmony, providing you do expose pretty nearly right; but if you have a slow plate or medium, and use an alkali solution of pretty fair strength, you then obtain a plucky or robust image, and a plate of the clearest printing quality and finest modulations; and in the use of the finer plates, or fastest plates, as Carbutt's 26–27, Seed's 24–26, Cramer's 35 or 40, Stanley's 25–26, and others of same speed, you require weaker alkali solution in order to get the best results; and in studio work you have another curious feature—dark-featured people with light-blue or white dresses, or pale-blonde face, dark drapery, with a light-blue or fire-red necktie or throat dress—then look out for snags. Then comes a pair, a pair "to be," a tall, angular man, sunburnt and bronzed, tanned might be the better expression, and a short, tow-headed, blonde, brilliant in a light-pink or blue dress, or some highly-colored neck rig; he in the blackest kind of black. The operator takes in the situation—"ömegit;" to light such a pair is a task; to develop such a plate requires brains, patience, and lots of self-control. Alkali and pyro here need to work at cross purposes. The next subject to tackle is an old gentleman, stout and wheezy, light hair and skim-milk color eyes, a face expressionless, and about thirty-six

hours or more of a stubble on his face of white hair, each particular hair not only standing on end, but acting as a refractor of light, presenting in the camera a problem in optics, and in the negative presenting a problem for the retoucher, only covered by free use of a stump. In developing, where the operator himself does not develop, it sometimes startles the dark-room fiend out of a collar button to see the sudden growth of the "optical stubble." Then the digging out the eyes is a problem that requires Mr. Carbutt's graded strength, and more too. Then alkali and pyro are needed in the most reckless profusion of varying degrees of strength, and the dark-room fiend is also in need of resublimated patience of far more than chemical purity, even if he don't get plates of two or three different numbers of *supposed* "sensitometer value." But here comes in a frequent and persistent element in every studio, in fact, a "numerous quantity;" it's the "petite brunette," seldom pliable or patient, dark as some of our "dusky brudders," with a black eye, and a tongue that snaps like the eye, and far oftener; usually a black silk dress, with a white, red, or the famous and frequent open work or lace collar or shoulder ornament, and a friendly caution to the patient and oft long-suffering operator not to get my face so dark, as "they always do," with an ominous click at the close, like a self-cocking pistol or a steel trap, into which he, or you almost instinctively feel you will certainly be pushed or will fall. And so on, day by day, odd subjects, queer ones, funny ones, and rarely a good subject and a real pleasant one; all possible contradictions and combinations as nearly innumerable as those of the bank-vault lock that runs into millions. And yet our operator is to pose, light, and reproduce all these very frequent and curious changes with some sort of success, with the *possible* proprietor watching him "fire them out," when there happens to be a dozen waiting, so that some fussy old dame, No. 11 or 12 in the procession, shall not get out of "patience," a virtue she never did nor will possess, while our slave of the focussing cloth is expected to keep cool, pleasant, polite, artistic (?), and yet "grind 'em out" while the poor devil's shirt sticks to his back, and his collar don't give him a chance to breathe, and he can duck his head under the cloth and think of some malediction, if he does not vocalize it. Then after two or three hours of this "fun" he enters the dark-room to combat a new lot of incompatibles; the plates vary in speed; some of them have been exposed to a mongrel white light; others have the "fly specks" in the emulsion, and will make unique, or antique, effect on the print, and modern or profane effect upon all the bipeds with whom they come in contact.

The alkalies need numerous degrees of the hydrometer, and the combinations presented to the actual operator of a decent gallery or studio each working day, is a conundrum of many powers, many progressions, and of a hurrah. When it comes time for him to go home to wife and babies, if he has them, few, who have never dipped their pens in gall or wormwood, have even an imaginary idea of all that passes, nor of the skill and self-control required to get through each day in a city studio without committing one or two premeditated murders. Sometimes the victim would be the proprietor; again, the persons who desire to be "took;" and again, the tramp plate-pedlar, whose plates never had a defect since one Noah came over in the ark, and never vary from sensitometer number by a fourteenth place decimal fraction; one grain of pyro in a barrel of water, and one ounce of soda to hogshead will devil-up a plate so quick as to make you dizzy. Then when you find your $4\frac{1}{4}$ x $6\frac{1}{2}$ cut with a hammer, not within more than a quarter of an inch of square, and as crooked as the legs of the last howling brat with bow legs on whom you spoiled four shots, the emulsion as thin as church oyster-soup, and as speckled as that peaked-face girl's cheeks, of whom the retoucher ventured to inquire if "she had the measles," when she sat, etc., then, you quail. When wearied by such a train of circumstances you are expected to dive into an ill-lighted, illy-ventilated room, and develop with care and rapidity a stack of plates, and bring out best results with a lot of plates not a single pair of which will do to be put into the same solution of soda and

pyro, and expect a well-modulated negative; somebody will be disappointed.

Here, then, comes skill and patience; if we have a speedy plate, twenty or above, we will use soda weak, pyro strong, and use, if any haste in coming out of image, a small amount of bromide of soda (not ammonia nor potassium) solution of not stronger than fifteen grains per ounce. In this way the contrasts will be brought out clearly and cleanly, and with the most delicate drapery, embroidery, etc., in the very most exquisite modulations, that will delight the heart of the printer. The amount of soda to be used cannot be specified, except by reference to the plate; but plenty of exposure —and more instead of less—is the sure way to have plates under control; an over-exposed plate can be made exactly dense enough, while an under-exposed plate can no more be developed or intensified, or both, than a crow can be taught to whistle "Old Zip Coon." Let the margin of exposure be small, not ten times but one-quarter to one-third, just a little more than your lens and light require, then work *slow* in the developing, using a pound a day of bromide of brains and of concentrated patience, C. P. I prefer one part each of sulphite of soda and of carbonate of soda crystals dissolved in warm water to make six parts when both sodas are put in; then filter through cotton, and keep in ground-glass stoppered bottles. Pyro dissolved in water any strength required; from one to six grains per ounce of developer, when mixed with soda, and about one-tenth as many grains of oxalic acid as of pyro dissolved in the pyro solution. Now how to use it, and what color shall we get in the negative? This refers to portrait photography, but is as applicable to the tramp camper-out, and for view and architect work. As to the effect, the plate and lens have both an effect we must watch; and in plates by different makers we obtain different effects, but with care we can obtain an approximation to sameness of color in different negatives from different makers and speed of plates. But here is a point to be observed, and one that is all too often neglected. The artist who knows his business (I mean the man who *feels*, and works by his feelings, intuitively, and for softness, delicacy of lines, clearness and contrast, pluck and modesty) in the portrait gallery opens his lens as wide as he dares to, and cut clear and clean, he develops for softness, and his high-lights are not harsh, nor are the shadows all a mass of indistinguishable black. You can see all the lines, wrinkles, pimples, etc., in the shadow; and the high lights come out clear, but soft, and the face and form stand out in relief, but softened and modulated.

The amateur (and they all have the rankest kinds of hobbies) fires off his or her plates for "snap shots," or for "microscopic definition," and what are the results? Flatness, *lack* of contrast between the sky and the buildings or other figures; the exposure is so long that you do not get a ripple on the water, nor a cloud in the sky, and in the case of stone or brick buildings, pavements, or deep shadows, you get in the high lights "microscopic definition" sure, but your detail lacks clearness or relief, and the shadows are "blackness" and the whole has an appearance of being flattened out, lacks in vigor, distinctness, and most decidedly in boldness of perspective, which is the resting point in most pictures as I look at them; hence my own answer and advice upon this oft-repeated question: Use a medium-speed plate, stop *up* as high as you can, and get clearness of definition to the edges; expose enough, plenty, but as short as you can, and get all the pluck needed. Then in the development, go after exactly the same points the studio operator does, and in the same way, viz.:

That color of negative that prints best.

That density that gives modulating clearness.

That modulation that gives softness, but detail, without the blurred appearance.

To accomplish these points use the developer mentioned above, or any other one you know or prefer, or can handle; use it as you please, as long as you please, and when you cannot get exactly what you want, and want something that will make you "happy as a clam," and give best results, then get out *Mosaics* for 1886, or 1887, or 1888, or THE PHILADELPHIA PHOTOGRAPHER, and use the simplest, surest, and in my experience the best I have used, and do

it by starting in with some *one* plate and exactly one exposure; proportion the soda and pyro to obtain the best printing negative, and then make half a second's more exposure, and then a whole second; then when you find that 40, 50, 60, 70, 80, 120 minims of soda solution to 4 ounces of water and 1, 1½, 2, 3, 4, or 5 grains of the pyro to the ounce give the class of negative you want and are satisfied with, then add a trifle to the exposure, and the least possible of the 15-grain solution of bromide of soda, and work the development up slow; do not under any circumstances rush the development. The color of negative may be a black, crisp, and just a little too harsh; a slaty blue, or a clearer blue you will not get a bright or a full-developed print from; but if it is soft and just a trifle toward red, or perhaps "sepia" would be better, you will get the very finest print unless the negative is weak or thin, but not clear; and it is on these last few lines that the perfection of portraiture hinges, or any other photographic production. With carbonate of potash you can rush development, but it is not fit for studio work, and the ghastly images to be seen at the botch shops, "6 for $1," "12 for $1.50," etc., show such lighting of faces as we might expect by a twelve-year-old boy, with the cheapest lens, slowest plate, and developing to a harshness complete only by its enormity. And yet there are people who buy the most in number for a dollar; but it is a happy compensation that the sensible majority do know and do go where the results are happier, even if it requires more dollars to measure them.

Exposure is a matter of feeling, and one that cannot be imparted. Development is far more difficult, more a matter of instinct, more of a *hope* for success, by exercise of a vast amount of care, patience, and skill, to study where to stop and how to obtain the highest attainable results from a piece of glass with a thin coating of bromide of silver in emulsion spread on it by means of glue of a refined character combined with some few chemicals and brains. For the further exercise of brains and chemicals in order to put in permanent form the faces of our loved ones, or those loved by others, not in our immediate care, for pleasure alone; or for bread and butter or the means of procuring those necessities, and of giving real pleasure to those who become our patrons I refer all of my readers to the PHILADELPHIA PHOTOGRAPHER.

(To be continued.)

OUR PICTURE.

WE have much pleasure in embellishing our current number with something entirely new to our readers, from our source at least, namely, a contact print upon bromide paper. The negative was made by Mr. W. H. Walmsley, of Philadelphia, a gentleman well known to a great number of our readers, personally and otherwise, through his instructive articles on Photomicrography which are appearing in our issues. With reference to the pretty little landscape study, Mr. Walmsley says: "The negative I sent is a view of Burmont Bridge over the Darby creek, within the limits of the city of Philadelphia. It was made at 4 P. M., on May 30th, with a Beck 4 x 5 lens, stop $\frac{f}{32}$, Seed plate, sensitometer 21, exposure one second. It was developed with pyro and soda." As we know, this little study represents a large number of beauty spots around the Quaker city with a great deal of faithfulness. The magnificent trees, the lovely little streams, and the native-stone bridges which abound there, give the photographer a splendid opening, and if he has the brains to choose the proper light and time of day, and knows how to manage his apparatus, he is sure to make successes.

Our practical readers will discover the excellent qualities of the lens and the master-hand of the photographer without our pointing them out. They will also be able to compare with their own results the excellent qualities of the bromide paper used, which comes to us from the factory of Messrs. E. & H. T. Anthony & Co., 591 Broadway, New York. The prints were made by Messrs. Roberts & Fellows, of Philadelphia. There is a velvety softness about the results which is admirable. The rich black tone, also, free from grayness and mistiness, is another quality which we observe, and which will be highly appre-

ciated by those who prefer a mat surface paper for direct printing.

It is a long time since we have presented a subject of this kind which is altogether so satisfactory.

PRACTICAL POINTS FROM THE STUDIOS.

Resorcin as a Photographic Agent.—Resorcin is isomeric with hydroquinone, and is cheaper. Has any one tried a mixture of resorcin and pyrogallic acid as a developer of gelatino-bromide plates?—Dr. Phipson, *in Moniteur.*

Action of Light on Phosphorus.—We know that phosphorus, when exposed to the light, becomes red and opaque. The cause of this phenomenon has been explained in two ways: Some say that it is the red oxide of phosphorus which in formed in this case, others sssert that it is caused by molecular motion. I was desirous of ascertaining which of these two opinions is the true one. I melted some phosphorus in water and placed it in a glass tube which was afterward hermetically closed with the aid of a blow-pipe. I thus had a cylinder of clear yellow phosphorus one inch and a half in length and about one-quarter of an inch in diameter. The sides of this cylinder were thus in close contact with those of the tube, and over the phosphorus, that is to say, at the extremity of the cylinder, there was about half an inch of water which isolated it from the small quantity of air remaining in the top of the tube. The half of the glass tube was then covered with opaque gummed paper, and, in this condition, the whole was exposed for one month to the light of a window facing the north. At the end of this time the phosphorus had become red, and the color had gradually penetrated the substance of the cylinder; the surface, protected by the opaque paper, however, was still yellow. It is, therefore, a molecular action that we have here, as the formation of red oxide, under these circumstances, is very improbable. Moreover, the actions of light are either molecular actions or reductions; I am yet to learn of an oxidizing action due to the chemical rays of light. When we say molecular motion we make use of two words which hide one of the mysteries of Nature; neither chemists nor photographers (who daily have similar effects under their eyes), can furnish a satisfactory explanation of this action.—Dr. Phipson, *in Moniteur.*

Discussion on the Intensification of Negatives.—At the North London Photographic Society a long and interesting discussion took place on intensifying gelatino-bromide negatives, in which Messrs. Trail Taylor, Mackie, Clifton, and others took part. The conclusion was reached that the best intensification of gelatino-bromide plates is produced by the formula of the late Dr. von Monckhoven. Several members of the Society have made use of it for several years, and always with great satisfaction. The same solutions, moreover, may be used a great number of times, and until they cease to act. Here are the formulas as given by Mr. Clifton. The bleaching solution contains: Bichloride of mercury, 10; bromide of potassium, 10; and water, 480. After having been completely bleached the plate is washed and afterward plunged into another bath containing cyanide of potassium, 10; nitrate of silver, 10; water, 480. When the blacking action has penetrated the thickest portions of the silver, the plate is thoroughly washed and dried. This formula has the defect of containing two very poisonous substances, namely, bichloride of mercury and cyanide of potassium. It is always well to avoid using such toxic substances when it is possible. We need not say that a well-made plate never requires any intensifying. Mr. Bishop prefers obtaining the desired degree of density by means of the development, and for this he uses a second developer stronger in bromide and in pyrogallic acid, after all possible detail has been obtained with a normal developer.—Dr. Phipson, *in Moniteur.*

Hydroquinone Developer.—Mr. Paul Baltin, of Potsdam, prepares the hydroquinone developer as follows: To 900 grammes (29 ozs. Troy) of water he adds 500 grammes (16 ozs. Troy) of hydroquinone, which he dissolves by agitating; he then adds 40

grammes (1 oz. 2 drs.) of sulphide of soda, and, after solution, 75 grammes (2 ozs. 3 drs.) of potash. This developer will keep clear for a long time. It contains but one-half of one per cent. of hydroquinone, and acts more energetically than the oxalate with previous baths; it is also less costly.—*Phot. Mittheil.*

A Brown Tone for Platinum Prints.—M. Taschler-Signer, of Bâle, gives the method of obtaining platinum prints having a *brown tone*. Here is the formula:

A.

Oxalate of Potash 300 grammes (9 ozs. 5 drs.).
Water . . 1000 " (32 ozs. Troy).

Heat to 70° or 80° C. (158° to 176° Fahr.).

then add.

B.

Bichloride of Mercury 5 grammes (77 grains).
Water . . . 100 " (3 ozs 2 drs.

By varying the quantity of bichloride it is possible to obtain all the tones between a gray-black and sepia.—*Phot. Mittheil.*

A photographic journal has just appeared in Sweden called *Fotografisktidskrift för Amatörer och Fäckman.*

Phosphorescence of the Cliché in the Alum Bath.—Messrs. Ph. Lénard and Mays Wolff, of Heidelberg, have made experiments on the phosphorescence of clichés on the alum bath; they found that this phosphorescence was due to the mixture of a solution of alum in the pyro developer.

Water	100
Potash	4
Sulphate of Sodium . .	0.75
Pyro	0.1

These gentlemen think that this phosphorescence is sometimes the cause of fogging.—*Phot. Mittheil.*

The latest and strangest case of the uses of applied science recently occurred near Perigeux, France, where five persons were imprisoned by the caving in of a quarry wall, and there were no means at hand to rescue them. To find out where they were, a shaft twelve inches in diameter was bored, down which was slid a tube, near the end of which was a small camera surrounded by a battery of electric lights. With this apparatus a number of negatives were taken, and the effect of the disaster shown, even to the faces of two corpses. It was thus known that the men were dead, and that effort to succor them would be useless.

HIAWATHA.

We have received from Mr. James Landy, of Cincinnati, a copy of his splendid composition entitled "Hiawatha," for which he obtained the Blair cup prize at the late Convention at Minneapolis. The picture is 13x22 inches, trimmed, handsomely mounted on India tint, with printed title, and the following quotation underneath:

> "Suddenly from out the woodlands
> Hiawatha stood before them."

The scene represents that portion of Hiawatha's wooing where, after hunting in the woods, Hiawatha appears to Minnehaha and her father at the door of the wigwam of the old arrow-maker. The young lover, laden with his success in the shape of a young and tender deer, throws the game at his feet, causing such a disturbance as to compel the attention of his sweetheart and her stoical father; or, as the poem puts it:

> "At the doorway of his wigwam
> Sat the ancient arrow-maker,
> In the land of the Dacotahs,
> Making arrow-heads of jasper,
> Arrow-heads of chalcedony.
> At his side, in all her beauty,
> Sat the lovely Minnehaha,
> Sat his daughter, Laughing Water,
> Plaiting mats of flags and rushes,"

While the old arrow-maker was meditating on the times when he shot the wild goose, or on the war parties in which he had taken part; and of those who came to buy his arrows in preference to inferior ones made by others; and of how times had changed until men used their tongues for weapons, like women, instead of arrows; and

> "She was thinking of a hunter,
> From another tribe and country,
> Young and tall and very handsome,
> Who one morning in the spring-time,
> Came to buy her father's arrows,"—

then, unexpectedly, they were aroused by the gallant young Dacotah brave. Sweet, expectant, Minnehaha

> "Heard a rustling in the branches.—
> And with glowing cheek and forehead,
> With the deer upon his shoulders,
> *Suddenly from out the woodlands*
> *Hiawatha stood before them.*
> Straight the ancient arrow-maker
> Looked up gravely from his labor
> Laid aside the unfinished arrow,
> Bade him enter at the doorway,
> Saying as he rose to meet him,
> 'Hiawatha, you are welcome!'
> At the feet of Laughing Water
> Hiawatha laid his burden,
> Threw the red deer from his shoulders;
> And the maiden looked up at him,
> Looked up from her mat of rushes,
> Said with gentle look and accent,
> 'You are welcome, Hiawatha!'"

Mr. Landy has followed the text with the utmost faithfulness, and has made a magnificent picture. We happen to know, from our friendship and intercourse with the skilful artist, that this picture is not the outgrowth of a superficial study of the subject, or the result of a few experiments under the skylight. It was built up from various small gatherings, as surely by degrees as the development of the film is built up by the action of the developer upon the light-impressioned plate. His inspiration started with carefully reading the poem; then a visit was made to our city, where libraries, museums, and artists were consulted, until our artist became fully impressed with the minute requirements of the subject. Then returning to his home he began his study; his planning, his collection of accessories, his choice of models, the genesis of composition, and then his trial studies. He acknowledges aid received from the famous background painter, Mr. Seavey, of this city; but the great interest and excellence of the picture lies in the foreground and not in the backgronud. The subjects are admirably posed, though we confess always to a feeling that Hiawatha is an unusually aristocratic-looking Indian. Rather an Oscar Wilde Indian, than a wild Indian. We try to get away from the impressions which our acquaintance with Indians has created, and to fall in with Mr. Landy's ideal. Hiawatha was an unusual Indian. Mr. Landy has made the most of him, with the help of an admirably chosen costume, and by the fine position accorded him in the picture. In Minnehaha we suspect we see a family likeness; indeed, we are quite sure that the fair young Indian maiden is no less than Mr. Landy's own, sweet, fair daughter.

The old arrow-maker we consider the most successful choice of all the three models. His pose, the placing of the hands, the expression, the light upon the face, and the position generally, are all exceedingly fine. If there is anything wanting in the other two figures, if they express too much, it is all atoned for by the magnificent old arrow-maker. Technically, the photograph is perfect. As a specimen of lens work, of careful lighting, of exquisite development, and beautiful posing and printing, we do not see how it could be excelled.

The picture comes to us framed in polished black-oak. The original design of the frame adds charm to the picture. Arrow-heads, strings of wampum and claws of the great grizzly, are branded here and there upon it. The top decoration is a tomahawk, with other accessories. The corners are fastened each one by five flat-headed iron bellows nails, which are in harmony with all the rest. The whole thing only needs a bit of the beautiful chalcedony which comes from the Indian country, to point the arrow underneath, to make it a perfect work of art. Mr. Landy may well be congratulated on his triumph in this matter. He has earned more than the prize alone, unless we mistake his character very much—for the production of such a picture as this is worth to any photographer more than any prize. It is an experience to him by which he will profit all the rest of his life in his art practice.

We cannot commend too highly to all ambitious photographers, the policy of making it a point to produce at least one such study every year of their lives, even if it should be necessary to close the studio for a week to keep out the public while they accomplish it. Besides all this, the production of such pictures goes very far toward lifting up photography in the eyes of the artistic public. We are glad whenever we see such

results come forth. They are sure to follow in the track of those who carefully study Burnet's *Art Essays*, and studiously practise what is taught by them.

ABOUT ARTISTS AND ARTISANS.

THERE is a movement in this city, gaining favor every day, which, it seems to us, is about to open the way for some of our "fathers in photography" to decide the all-important query, "What shall we do with our sons?" We all know that there are traction engines which move and pull, but we know, too, that a great deal more is obtained from the same amount of fuel if the engine is guided by a carefully laid rail. It is the purpose of Mr. J. Ward Stimson to provide rails that will make everybody who runs on them, run easier and better, and to accomplish the best results. We have not heard that Mr. Stimson proposes to take photography along with him, but we believe the necessities of the case will induce him to do so. We consider it our duty and a pleasure, therefore, to let him speak for his cause, as follows:

"By the earnest efforts of many talented artists of our last decade the wide experimentation and discussion of art and the practical industrial successes attained, Americans may be said to-day to be fully convinced of our national need of art and of its practical application to our industries. In my personal and public effort to respond to this great need and to create, first, under the auspices of the Metropolitan Museum, and now under that of more alert and public-spirited citizens, a truly American 'University for Artist-Artisans,' the loyalty and popularity of my classes, the prominence of the test, and the equal prominence of the public discussion and general sympathy, have revealed pretty clearly a second and equally general conviction that, as art is a serious national work (and not a dilettanteism), it should be conducted by serious business and professional men (and not by *dilettanti*). There remains one point more upon which the public have a right to ask and receive from me a categorical answer. Do your ideas and methods meet the approval of competent industrial and professional judges, and, if so, what are those methods? To the first I allow my past record, the unanimous voice of many hundred mature pupils, and the subjoined names of public leaders, who have expressed their sympathy, to speak for themselves. Upon the second you will allow me a few words of technical explanation, which I feel would be welcome to the public and timely, as the question must soon be settled." . . .

Mr. Stimson here follows with a long list of prominent artisans in our city who approve of his plans. It is not essential here. He then further says:

"The principles upon which I have based my system are derived from those now widely accepted in Europe and among our foremost educators as most in accord with Nature's self, and under guidance of such minds as Clifford, Darwin, Spencer, Pestalozzi, Froebel, etc., are being formulated into the 'natural method', the 'method of evolution.'

"Recognizing at the basis of existence a 'dualism' convertible into terms of 'space or place,' 'eternity or time,' 'static or dynamic,' 'centripetal or centrifugal forces,' 'conservatism or progress,' 'nation or state,' 'humanity or self,' I strive to unite in my pupils 'practice and theory,' 'matter and spirit,' 'realism and idealism,' 'artisan and artist,' acquainting them as widely as possible with the conservative or 'static' traditions and experiences of the past, while stimulating the personal 'dynamic' force of individual character and inspiration. On this ground, again, I welcome in class training the interinfluence of opposite temperament and sex.

"My practical method is to familiarize the mind of the beginner naturally and gradually, first with atonic laws of motion, rectilineal and curvilineal, with relations and dimensions; laws of perspective and principles of progression, circulation, parallelism, symmetry, tangency, radiation, harmony, etc., as shown us in the static strata of rocks, the dynamic and rectilineal energies of crystals and minerals, the curvilineal and spiral action in fishes and shells, the organic and living beauties in floral and animal life. Ever most concerned with the vital point that the pupil should unite men-

tal 'perception' to merely optical 'vision,' and his mind and spirit sympathize while his eye and hand execute; ever less afraid of trivial error in execution, which practice will overcome, than radical errors in perception and method, he is permitted to test his effort (where such test is possible) by mechanical contrivance, but by preference is encouraged to cultivate an inner and more vital self-reliance and self-expression. Thus along primordial principles and in steps by which Nature, ever the most wonderful and motherly teacher, walks and works herself, the scholar's perception and sympathy are cultivated and his eye led along by easy evolutions 'from points to lines, to movements, to space, to translucent crystal planes (in which structure is visible), to more and more complex forms and less and less transparent matter (where structure is becoming hidden), but where from very opacity the planes become interesting from their graded shades, textures, and colors. Now pencil, chalk, and charcoal, that have wisely steadied our early steps and disciplined our first perceptions of the inorganic world, gradually give way to plastic clay, in which we tangibly build up and best assimilate the graceful suggestions of leaf and gourd, conch and fish, till flowers with their tender forms and transparent tones, suggesting water color, and fruit with its substantial texture and solid tones, suggesting 'oils,' conduct to 'still' life, from which we are led to the 'antique' and 'life' classes. Now, through the wide-flung doorway of the 'organic world,' led by each sibylline leaf and bird and bee with their 'Aladdin lamps' of instinct and example, we are invited to test the applications of point and line and filmy web and graceful form and infinite color, each adapted to appropriate sphere and function, in delicate threadwork, gauzy lace, loom-wove textile, brilliant jewelry, mosaic, tile, ceramics, stained glass, chased and hammered metals, carved wood and stone, cabinet design and architecture, till sculpture and painting, etching and illustration are attained. Thus, mind and hand together led into a a fulness of practical appreciation and experience, the pupil is ready not only to enjoy perpetually and produce intelligently, but to canvas without servility the products of other days, and enter competitively into the creative energies of our own. Familiarized with the practical processes and marvellous products of Nature, he has learned that she is system, order, harmony, fitness, proportion, and evolution; that beauty is Deity; that art is poetry; interpretation not mimicry; principle not recipe. Individuality, character, courage, sympathy, rather than servility, crudity, affectation, pedantry."

DOTLETS FROM MY CALENDAR.

BY AUNT DOTTIE.

[I HAVE been to Europe on a "Kadok" carouse, or else I would have kept my promise to contribute to your pages oftener.

P. S. I like the "Kodak" better than I do a bicycle, and it is nicer for girls.

As of old, AUNT DOTTIE.]

"Let's teach ourselves that honorable stop,
Not to outsport discretion."—*Shakespeare.*

Which means to "go slow" when exposing, when developing, and when toning our prints.

"The ordinary employment of artifice is the mark of a petty mind; and he who uses it to cover himself in one place, uncovers himself in another."—*Rochefoucauld.*

Which meaneth that the photographer who retouches too much "gives himself away"—proofs? Why he shows that he would rather flatter his patrons than honor his art, and that he covers over bad manipulation by means of a lying pencil.

"Better to be despised for too anxious apprehensions, than ruined by too confident a security."—*Burke.*

Which indicateth that it is better to subscribe for and read a good photographic magazine and be wise, than to appear too conceited to your well-wishers and have them you despise. Now that's true.

"You may fail to shine, in the opinion of others, both in your conversation and actions, from being superior as well as inferior to them."—*Greville.*

Which assertion hinteth that good work is sure to gain favor in the end, even though

your patrons sometimes from ignorance (twin chum of conceit), find fault with it. Work intelligently, and you will win.

"Our actions are our own; their consequences belong to heaven."—*Francis.*

This was never truer in any case than in that of the photographer, who has to do with obstroperous chemicals and an obstroperous populace. He needs grace every day.

"Affectation is a greater enemy to the face than the smallpox."—*St. Evremond.*

Don't be afraid to quote this to sitters who worry you by the aforesaid and first-said.

"Of all wild beasts, preserve me from a tyrant; and of all tame, a flatterer."—*Johnson.*

Poor Sam'l must have written this after seeing his proofs and then the finely re-touched pictures. Perhaps you see where the "tyrant" and where the "flatterer" come in.

"The first duty of a wise advocate is to convince his opponents that he understands their arguments and sympathizes with their feelings."—*Coleridge.*

And so will the wise photographer act when the sitters, and the cousins and—(excuse *me*!) come along "to help make the baby look pretty."

"Act well at the moment, and you have performed a good action to all eternity."—*Lavater.*

But don't, under any circumstances, expose your plate when you feel that things before your camera are all wrong.

"Adversity borrows its sharpest sting from our impatience."—*Bishop Horne.*

And yet photographers will disregard William Shakespeare's admonition, given first above.

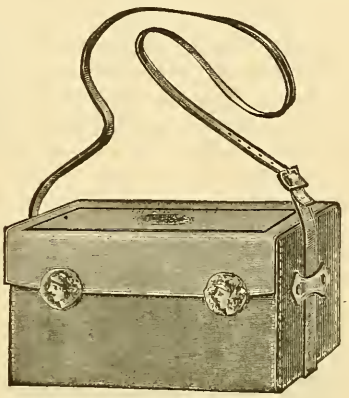
No more at present.

WANTED.—The PHILADELPHIA PHOTOGRAPHER for August 20 and Nov. 5, 1887. Address E. L. Wilson, 853 Broadway, New York.

THE KODAK CAMERA.

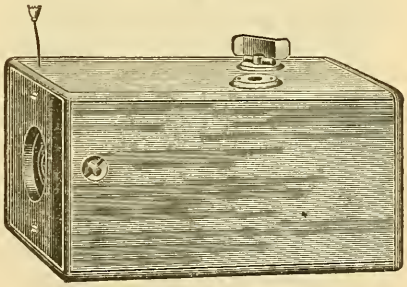
TEN years ago when the landscape photographer went out upon a photographic pilgrimage he was obliged to carry with him apparatus and chemicals amounting in weight to from sixty to seventy-five pounds net. He was obliged to develop his plates in the field, and his accomplishments of a day were limited to the quantity of glass he was strong enough to carry, and by the number of exposures that it was possible

FIG. 1.



The Kodak Camera in its carrying case.

FIG. 2.

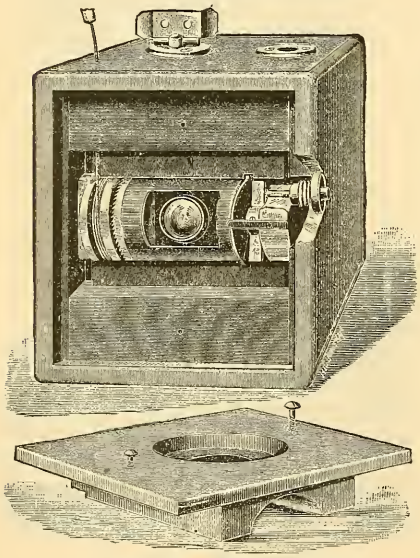


The Kodak Camera ready for use.

to develop in the hours of that day. Usually if he succeeded in making a dozen good plates he considered that his day was well spent. There has been a good deal of improvement made in light-weight photography since that time. The developing tent has been abandoned; bad-smelling collodion has been thrown aside; the silver bath has been sent to the refiner; and the wet process has become almost a thing of the past. The

necessity of carrying great weight for the purpose of obtaining a day's enjoyment with photography has been made unnecessary by the perfecting of the dry plate and American films. But this is an unsatisfactory world to work for. As soon as it is shown that labor may be saved and speed increased, something more is required. If we have a limited express, then we immediately begin to want some aerial method of conducting us from place to place. If that ever comes about, then we are prepared to search for pneumatic transit. And so, as soon as we have the weight of photography lessened by dry plates, we want the burden of the dry plate process lessened by some other method. The wish, as it happens, has only been father to the thought, and the desired result has come to us in the most unexpected way.

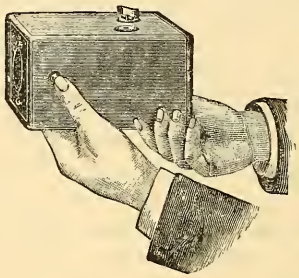
Fig 3.



The Kodak Camera and Shutter.

Through the ingenious and wonderful little instrument produced by The Eastman Dry Plate and Film Co., and known as the "Kodak" Camera, we are able to cry "Eureka." Its possibilities are simply marvellous; its parts are illustrated by the figures which accompany our remarks. The "Kodak" Camera is designed to hold enough sensitive paper or film to make a full hundred pictures about two and five-eighth inches in diameter. It is covered by a neat outward case of leather, measuring six and one-half inches long, three and one-half inches wide, and three and three-quarter inches high. It weighs less than two pounds.

Fig. 4.



The exposures are made by the operator holding the camera in the hands, although it may be rested for slower exposure, and used with the tripod when it is found necessary. Scarcely any description is needed when the figures make the interior arrangements and the working so plain, and yet we shall attempt to describe.

Of course those who are familiar with photography will see that the "Kodak" is an outgrowth of the well-known "Roll Holder," invented by Mr. Eastman, and that it is a model of compactness, neatness, and ingenuity. At the rear end is a sliding box in which the sensitive paper is confined on a spool; this spool unwinding, the paper passes over an index roll, and on its way is exposed to the action of the light through the lens. There is an indicator placed in the direction of its diameter on the upper end of its axis, and also metal points on its circumference for puncturing the division line between the pictures. A small measuring roll is also supplied, over which from the supply spool the paper passes, thence behind the metal mask the opening of which is circular, in front of the exposing platform. From this it is finally wound up on the spool to which the key is attached. Thus one hundred continuous exposures may be made without stoppage if you wish, and they are perfectly safe from the light until removed in the darkroom for development.

It seems almost incredible that so many possibilities should rest within the confines of so tiny a structure, and such an unpretentious-looking one, and yet such is the truth. Examples of its work are before us in any quantity. Results from all kinds of subjects, such as people walking in the street, animals of various kinds, landscapes, interiors, and what not—everything there is for a camera to do. The Eastman Co. issue a "Kodak" primer, which supplies the reader with varied information on the subject of exposure, distance, choice of subject, and everything necessary to know. It is very complete. In fact what comes with the camera makes it absolutely unnecessary for the novice to have any previous knowledge of photography whatever. The amateur can purchase a "Kodak," and he can, if he follows directions, take it with him on any proposed trip, and bring home with him a record more valuable than any diary—one which he can share with his friends to an unlimited extent. The offer of the Eastman Co. does not stop there either. If the "Kodak" is sent to them they will remove the one hundred exposed films, develop the views, and make a print from each one, for the small sum of ten dollars. Then the little magician can be charged again, and the operator made ready for another rampage.

There is no end to the use that can be made of such an apparatus as this, and the operating is so easy that any one may apply it. Each camera is practically tested, so that there can be no failure in results if the directions are followed.

One or two pulls at the winding cord which winds up the shutter-spring makes the thing ready; then the cap is removed from the front of the lens, and while the camera is steadily held with the two hands, as shown in the figures, the thumb of the left hand resting upon the trigger-pin on the side of the camera, aim the apparatus at the object you wish to take, and fire. The exposure is caused by the pressure of the pin with the thumb, for then the shutter revolves and the thing is done. Then with the right hand the key on top is turned to the left, and the movement of the little mark on the upper end of the axis of the supply spool is observed winding until it has made one revolution with respect to the mark on the round plate, as seen on the engraving of the camera case. It is possible to make as many as twenty separate exposures in one minute. To fix the shutter for a longer exposure, the releasing pin is pressed until the shutter stops revolving. It is possible that light might enter the camera at such a time, therefore it should be pressed tightly against the person in order to prevent such a calamity. Then with the finger move the shutter until its aperture is opposite the lens; next, place the cap over the lens, locate the camera on some convenient steady spot, or on the tripod if more convenient, and make the exposure in the ordinary way by removing and replacing the cap.

While the Eastman Co. offer, and prefer, to develop the plates, particularly for novices, they provide ample directions for doing so, in one's own laboratory, in the primer.

One of the chief merits of the "Kodak" system is that a purchaser may make pictures and yet have none of the trouble attendant on dark-room manipulations. It is not even necessary to run the risk of removing the spool from the camera, providing that it is desirable to have it filled again. Simply pack the little thing up, address it to the Eastman works, and in time your camera will come back fully charged for a hundred more incendiary acts upon or against the public.

Moreover, one hundred little feathery negatives, much lighter than glass, will come to you, from which any photographer may make you duplicate prints whenever you desire; or if you choose lantern slides for the instruction and amusement of your friends during the winter.

This tiny camera is as full of delight and pleasant sensations as a bottle of attar of roses; and like a good many of the bottles of the aforesaid oriental perfume it is supplied with but a single drop. Yet this drop may be made to drop and drop and drop again until the whole household and the whole community is entranced by its subtle influence. There is no end to the quantity of pleasure and delight and satisfaction that it may give to those who have a fondness for the fascinating pursuit of

photography. It seems to us now that Mr. Eastman has climbed to the top of the pole and is simply resting there on one foot, daring anybody to bring photography to a finer point. He seems to have reached the extreme limit, though, like Alexander of old, he may not feel satisfied. We hope at least that he will not sit down and despair in case he finds it impossible to make more progress, but, on the contrary, devote himself to the task of filling the country with "Kodaks."

FACTS AND FANCIES.

What is Meta-bisulphite of Potash?—This salt has been lately recommended for preserving the solution of pyrogallic acid, and is thought preferable for this purpose to the sulphite of soda, now generally used. The meta-bisulphite of potash is obtained by the supersaturation of a strong solution of carbonate of potash by sulphurous acid; the salt produced is then precipitated by adding to the liquid the required quantity of absolute alcohol. The addition of the alcohol produces a mass of acicular crystals which are thrown on a filter and washed with absolute alcohol. This salt is neutral to litmus-paper; it has the disagreeable tasts of sulphur, and slowly gives off sulphurous acid when exposed to the air. It is asserted that its formula is $KO,2SO_2$, and that it is the anhydrous bisulphite of potash.—*Paris Moniteur.*

Orthochromatic Plates.—*Mittheilungen* calls the attention of those who have occasion to reproduce interiors or dark paintings by means of orthochromatic plates to this fact, that a previous bath of diluted ammonia (2 parts of ammonia for 100 parts of distilled water) increases about five times the sensitiveness of azaline and eosine plates. Dry before using. This bath is also very useful in cloudy weather. The plate should be immersed for about a minute. To accelerate the drying, substitute alcohol for a portion of the water.

Dr. Stolze gives, in *Photographischer Kalender* of 1888, a new method of using gelatino-bromide paper. Expose to light until the paper is completely black, then plunge into a solution of bichromate of potash, dry in obscurity and expose under a negative, making use of the photometer, as is done for carbon paper. Develop in warm water, the reduced silver taking the place of the coloring powder in the galatine. A very agreeable tone may be obtained with the sulpho-cyanide bath. This process has the merit of allowing the utilizing of papers that have been damaged either by having been kept too long, or by the action of the light.

An association of amateur photographers has just been organized in Rome. This is, we believe, the first society of this kind existing in Italy.

Organic Photographic Developers.—I have just read the note of M. Mercier concerning vegetable photographic developers. Thinking that it might interest your numerous readers, I take pleasnre in calling your attention to two substances possessing the property of progressively oxydizing when submitted to the action of air and light, and of acquiring, consequently, a deeper and deeper color. I refer to *thalline* and *kaïrine*, substances recently introduced into medical practice, and praised as antipyretics. These substances, in aqueous or alcoholic solution, placed in contact with a little paraldehyde, soon acquire a dark color, especially the kaïrine, which, chemically, is the chloride of methyltetrahydrate of oxyquinoleine. The color of *thalline* is a greenish-brown, finally brown, whilst that of kaïrine is first red, then reddish-brown. It was in making some investions on the alkaloids that I perceived these two reactions, which take place even in small quantities. The price of these solutions would, therefore, be moderate, and we would have the advantage of possessing solutions of definite proportions, which cannot be done with vegetable infusions. In regard to the reaction, I believe that the paraldehyde is retransformed into aldehyde, to reduce the two substances.—Eug. Ackermann, *in La Nature.*

THE OPEN CORNER.

A Hint to the Executive Committee of the P. A. of A.—Would it not be well to suggest in your magazine that all prizes

to be given at the next Convention of the P. A. of A. should be announced as early as possible? It will greatly increase competition. Good work cannot be thought up and made in a minute.—E. Long, Quincy, Ill.

Some Points.—Will you kindly add to what you have already said about my picture in your early September issue. I use a No. 3 A. Darlot lens for cabinet work, and I have a No. 5 A. Darlot for larger work. What I sent is not particularly striking, but of my ordinary every-day subjects. I take particular care with my lighting, and make my composition a constant study.—H. M. Waide, Quincy, Ill.

Development of Bromide Prints.—A few issues ago we noticed a very beautiful cabinet portrait made upon bromide paper by Dr. J. C. Parker, of Grand Rapids, Mich. Since then we have received from Dr. Parker the following details concerning his method, which will come in very well now with the picture which embellishes our current issue. Dr. Parker says:

"The method of developing the bromide prints sent you was simply the use of the hydrochinon developer prepared by M. A. Seed Dry-Plate Co. I used it precisely as I have done for the development of dry-plate negatives in every particular. After exposure to light, I wet the print to render it limp, laid it in the developing tray, poured the developer over it, and when it was sufficiently brought out, washed it and immersed it in the hydrochinon bath of the usual consistency—five ounces to the pint. The one sent you was the third trial. It seems to me that in this hydrochinon we have a perfect universal developer. I have just returned from an outing in which I carried my camera and a bottle of developer. I improvised a lantern by first cutting the box on each side at the end to give ventilation. As I was afraid the box would allow too much actinic light to pass through, I put over it a sheet of orange and another of red tissue-paper. I developed at night in my tent, and I was so well pleased with the result that I shall henceforth use this method in my dark-room."

Certainly we are all much obliged to the Doctor for giving this information to us. It will prove of use to many I have no doubt.

Mr. W. T. Wilkinson seems to be much pleased with the expression of American opinion of his book, and it has also received much praise from fellow-workmen abroad. It will be seen that Mr. Wilkinson gives the swelled-gelatine process in *Mosaics* for 1889, but so anxious are we that our readers should obtain the information early that we reproduce the article in advance in our current number. Mr. Wilkinson says the process is not used in England, but if called for in this country, of course, his American friends shall have all he knows. He says: "I like the get-up of the book very much." We are glad to say that his new book is creating a new field for photography entirely, and gaining many fresh friends for our art in directions where it has not before been developed.

The New York University for Artist-Artisans.—We desire particular attention given to the article on this subject in another place. We have not yet learned that Mr. Stimson proposes to include photography in his curriculum, but we are very sure that he cannot avoid it, and we commend his new system to those who have young men and young women under their care, and in whose future they are interested. If Mr. Stimson succeeds in his enterprise it is going to be a magnificent help for all departments of work where art has a single chance. Where has it not a chance if it is faithfully developed and attended to?

Cachou and Catechu.—Our readers frequently ask us the difference between these two terms. There is none. They both represent the same subject. The latter is the East Indian name, and the former the French term for an article which we believe can be found at all the druggist's stores.

Mosaics for 1889 will far exceed all its predecessors. Secure it early. See page 140.

Editor's Table.

We have received from the Hesler Photograph Co., Chicago, Ills., a series of views of Lincoln Park, in very attractive shape. The series embodies twelve whole-plate views of the park, printed by one of the gelatine processes. We suppose the negatives are the handiwork of our veteran friend Hesler, for each one seems to be impresed with his individuality. The gem of the group is the frontispiece, consisting of a family of buffaloes in repose, with a watch dog lying by them. The views are in a neat cover bound together with a ribbon tie. The price is not given.

Pictures Received.—From Mr. O. T. Morton, Richmond, Va., a cabinet view of the Washington headquarters in that city; an old-time stone house with sloping roof and dormer windows, caught in a lovely light; an example of perfect development. From Mr. C. P. McDannell, Titusville, Pa., a view of his exhibit at the late fair in his city, for which he obtained the first premium. It consists of a group of portraits of various sizes tastefully arranged, with a portrait of Mr. McDannell and his amiable lady serving as the corner stone; it is creditable all through. From Mr. W. Orin Tasker, Haverhill, Mass., two exquisite photo-micrographs, one of the tongue of a house fly, and another of an arranged slide of diatoms plates, chirocota, and butterfly scales. The latter are arranged on a slide not larger than the point of a pencil. Both were taken through the microscope, and, of course, enlarged, the last-named being about two and a half inches in diameter. As examples of this department of work they are very excellent.

The History of the Geology of New Hampshire.—We have received from the Executive Department of the State of New Hampshire, three immense volumes on the State Geology, edited by Prof. C. H. Hitchcock, assisted by Prof. T. N. Huntington. The volumes are exceedingly handsome and are illustrated by gelatine pictures from negatives by Mr. B. W. Kilburn and others. Besides this, there are numerous wood-engravings, the whole printed in the best style. Accompanying them is an atlas of the mountain region of the State of New Hampshire. Together they make a very handsome showing, and are of priceless value. It has been our privilege to climb these old White Hills for twenty-five years or more. All the familiar spots are here described, with a thousand and one bits of information which we never suspected could be had. Some of the photograph plates of diatomacese are very wonderful. The whole series represents an immense amount of hard work and research.

Interior Decoration.—Messrs. Marcellus & Cubberly, two promising young gentlemen, have recently opened business for themselves at 1834 Ninth Ave., New York City. They attend to all sorts of interior decoration, such as paper hanging, mural relief, Lincrusta-Walton, painting, kalsomining, hardwood finish, graining, etc. Photographers frequently need the address of some parties reliable in this line, and we present it for the common good.

Editorial Courtesies.—We have to thank our esteemed contemporary, Thos. Bolas, Esq., editor of *The Photographic News*, London, for his courteous notice of our humble work, *Quarter Century*, and also for a copy of *The Socialist*, a weekly halfpenny magazine, of which he is the editor. The social question is treated differently from the methods adopted in America, for the reason that the style of socialist they have in England is different from that which we have here.

An Old Friend Gone.—In a private letter from Mr. Hiram J. Thompson, 84 Wabash Ave., Chicago, Ill., we learn with much regret of the demise of our old friend, and his right-hand man, Mr. Seymour. Mr. Seymour was ill for a number of weeks with typhoid fever, and, although his strong constitution gave hopes of his ultimate recovery, a relapse occurred on the 26th inst., and he sank under its pressure. He is mourned by many staunch friends with whom he was acquainted, including ourselves. Such men are so rare that, whenever they are taken, their death becomes a common loss.

The Art of Photography.—Mr. W. H. Mowrey, of Milford, Mass., receives a half column of praise on the artistic qualities of his photographs from the Milford *Daily*. The editor seems to

seems to think that "photography is developing to a rather alarming extent." But we beg him to keep his seat. There will be no injurious smashup on account of this great growth of our art; neither will there be any stoppage, even if expressions of alarm continue to increase. Photography is bound to rise.

A Pleasant Journey.—We learn that Mr. H. S. Bellsmith, of the Eastman Dry Plate and Film Co., is now in London, where he expects to remain for some time to come in the interests of the company. Mr. Bellsmith is one of the brightest pushers connected with this wide-reaching firm, and is favorably known to very many in our own country. He will doubtless meet with welcome among English photographers. His address is 115 Oxford Street, London, England.

Testimonials.—We get more of them than we ought to, and many more than it would be pleasant for our readers to occupy space with; but these given below come from veterans in the service, and out of respect to them we should make them known.

Mr. Frank Thomas, of Columbia, Mo., says: "The Philadelphia Photographer, grows better and better all the time, and *Mosaics* having always led the van in year-books, will doubtless do so at least up to its twenty-fifth birthday. Continued success to you."

Mr. Theodore Heinig, Dayton, Ohio, says: "Your work on *Photo-engraving* is received, and I consider it most excellent on that subject. I must congratulate you on it, and believe you will have great success with it."

Mr. H. A. Hyatt, St. Louis, Mo., favors us with descriptive circulars of his new rapid landscape lens called the "Argus," and of his new portrait lens called the "Rival." Mr. Hyatt seems to have a wonderful faculty for providing excellent articles of use for his patrons, and is meeting with a deserved and great reward.

Scovill Manufacturing Co. announce a wonderful array of good things for their coming *Annual*. If they excel their last number we are of the opinion that they will excel Scovill, for it is not easy to make anything better.

New Books in England.—Messrs. Iliffe & Son, 98 Fleet Street, E. C. London, have just issued *An Introduction to the Science and Practice of Photography*, by Chapman Jones, F.A.C., F.C.S. This book consists of a series of lectures that were delivered during the past year at the Birbeck Institute. Portions of them were reprinted in the *Photographic News*. As we read them over from week to week in the *News* we were much impressed with their clearness and the clear-headedness of the lecturer. They are admirable in every sense. The book is divided into three parts: Part I. Preliminaries; Part II. Apparatus; and Part III. Processes. It is fully illustrated, 274 pages and a full index, and is a marvel of cheapness, being sold for half a crown. Parties wishing it can obtain a pamphlet with a list of contents and index from the publishers.

The same house announces *The Indispensable Hand-book to the Optical Lantern*. When it arrives we shall call the attention of our readers more particularly to it.

We are also promised by the same publishers, *Collotype and Photolithography*, by Dr. Julius Schnauss. We expect a copy will be forthcoming soon.

A Marvel of Cheapness.—From Prof. C. Piazzi Smyth we have received a little medallion picture of the cloisters of Fountains Abbey. It is framed in a brass oval, similar to what old photographers will remember using in their velvet frames of half size, which, with the picture is sold at the ridiculously low price of six pence, or twelve cents, by the photographers in England. With it comes a copy of the report of Prof. Smyth on the condition of affairs at the Government Observatory at Edinburgh.

Sun and Shade.—Our notice of this remarkable publication in our last number was entirely too modest for the subject in hand. It was written after a preliminary look at the October issue; but now the full work is before us, we return to it once more with a desire to call the attention of photographers to its wonderful beauty. The architectural sample alone is worth the price of the book, being the first specimen we have seen of a gelatine print in colors. It is very beautiful.

We have arranged with the publishers of *Sun and Shade* to club with it for the new year at the rate of $7, or for $7.50 we will send a *Sun and Shade* from the beginning to the end of next year with the Philadelphia Photographer for all of 1889. The testimonials that the new pictorial has obtained are simply marvellous, and the publishers have already agreed to increase its beauty and value. Price, thirty cents per copy. $3 a year. No free samples. Two numbers now ready.

A Marvellous Series of Pictures.—We have received from Prof. S. W. Burnham, of the

Lick Observatory, the first batch of photographs that have come to us from that central point of heaven and earth combined. The first view is of the interior of the Observatory, showing the telescope from end to end with all its accessory machinery. Two observers are posted, one at the eye-piece, and one at the adjustments. The apparatus has been described so often that we need not say further than that it is simply immense. The photograph is 8 x 10 inches.

Even more interesting than this are the views that came with it first, of three different phases of the moon, which are simply perfection. Their diameter is fully five and a half inches, and doubtless they are from direct negatives. The picture of the Observatory, with the surrounding hill and country, is also exceedingly interesting. The site is a lovely one.

The series is accompanied by three very excellent portraits, one of a bright young miss clothed in American flags; another of a study in black and white of an old Mexican, a fine result; and the third of what looks like a flash picture of Chief Justice M. W. Fuller. As yet we have no particulars concerning these pictures, but we expect in time to receive some communication from Prof. Burnham that will enlighten us more. We shall share the information with our readers.

Photographic Mosaics, 1887. — The twenty-fifth issue of this little annual is filled with some splendid matter for the use of the present and future photographer. We confess, although our belief in photography is very great and very wide, that we are not a little surprised, as well as pleased, at the quality of the articles that come, at the amount of thought and real earnest work expended upon the topics of our beautiful art-science. One of the writers for *Mosaics* this ear, says, "Photography is of age: and yet the writer has continued queries of and for new chemical effects, but for the common worker what can he offer except he be plagiarist? Each time I open my books I find some idea which I wish I had spoken long ago, couched in the language of another, more elaborate, more scientific, and in more fitting words than mine could be, so that all the thoughts that come to me really seem like words echoed from my friends in book form; so I hesitate and lay my pen down in despair of contributing anything which will be readable." And yet our friend does send us for *Mosaics* something that is entirely readable, and will be found very useful, and he may rest assured that what he sends will do a great deal of good. Our correspondent further says: "When I read the articles in the Philadelphia Photographer, semi-monthly, it appears to me as if I was in the presence of some Niagara of information which could overwhelm me with its volume of intelligence. Oftentimes I feel a relief and a nearness to the one who asks for some solution to draw him out of his difficulty. It shows to my mind that there are many in trouble, and that we do not all get grand results, or are capable of producing such fine articles devoid of defect. Therefore, to the one in difficulty I extend my hand in sympathy, and will gladly help him to the plane of intelligent observation. I believe your column devoted to the line of common failure and errors is in harmony with the wishes of many of your readers who, like myself, have not yet reached the standard of our high calling, who are using the means to gain some light in photography from it, or to benefit by those who so freely give from their stock of knowledge, is the desire of many of us."

Certainly our correspondent has imbibed the right spirit, and we congratulate him.

Rochester and its Suburbs, is the title given to a wonderfully attractive publication, published at twenty-five cents, by the C. L. Sherril Co., Buffalo, N. Y. It is illustrated by 232 pen drawings by C. K. Darrow, from views made with the Kodak camera, printed in blue and sepia. The pictures include factories, mills, residences, public buildings, bridges, churches, and what not of things of interest pertaining to a city of 130,000 inhabitants—one of the spokes of the great photographic wheel. The publication comes to us "with the compliments of the Eastman Dry Plate and Film Co.," to whose works a page in it is devoted. The illustrations are of the exterior of the works, the office, the laboratory and still; the coating room; the developing room; the machinery for slitting the film; and "the flirt" for whirling. We commend this work as an example to photographers of what any of them may do in any enterprising place, and make money. The scheme is to make the views, photo-engrave, and publish them, first having secured from the parties who are to be benefited by the publication, enough patronage to make the enterprise pay. Each one sharing in the costs should have a certain number of copies for distribution. The quantity of copies sold, otherwise, will depend upon the public interest in the locality. You who complain of low prices and dull business, get at this, practise up on photo-zinc etching and become wealthy and well-known.

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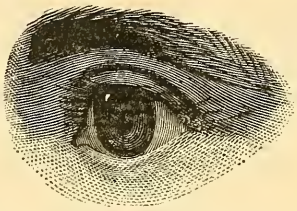
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A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

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It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

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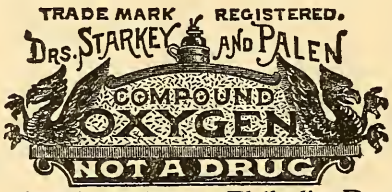
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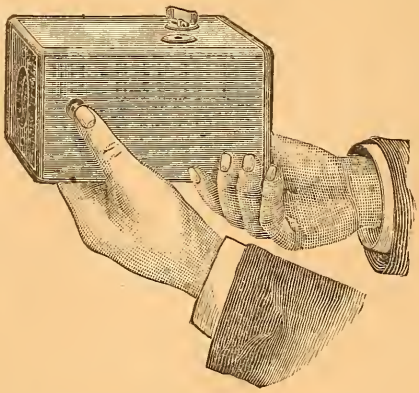
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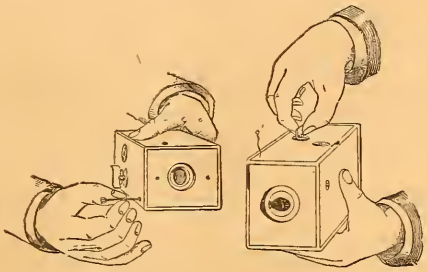
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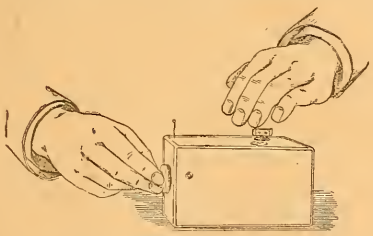
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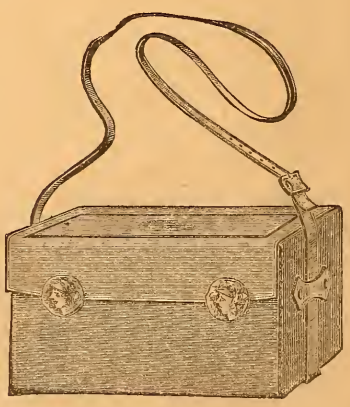
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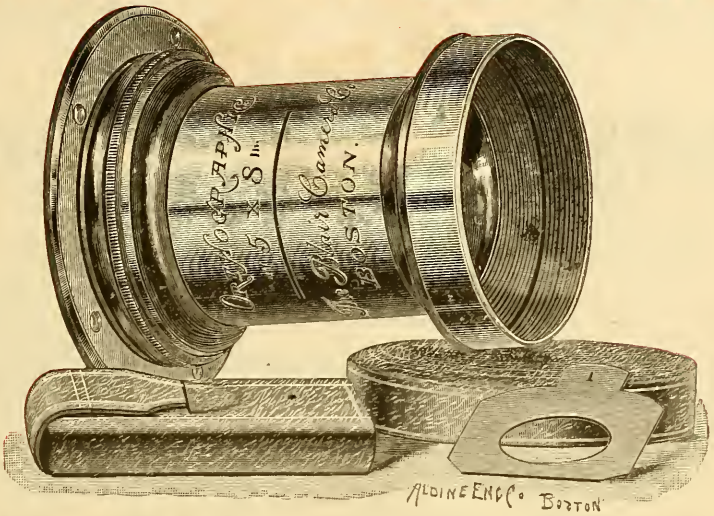
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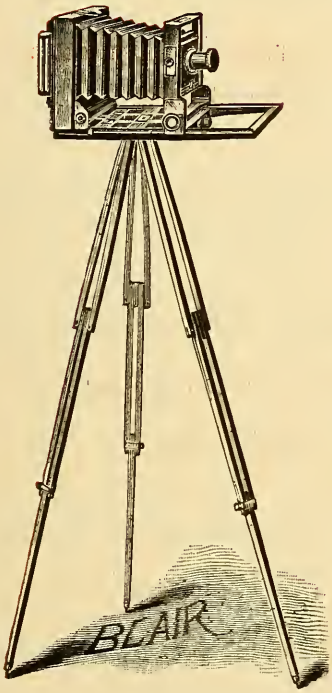
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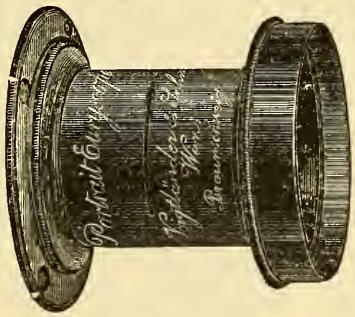
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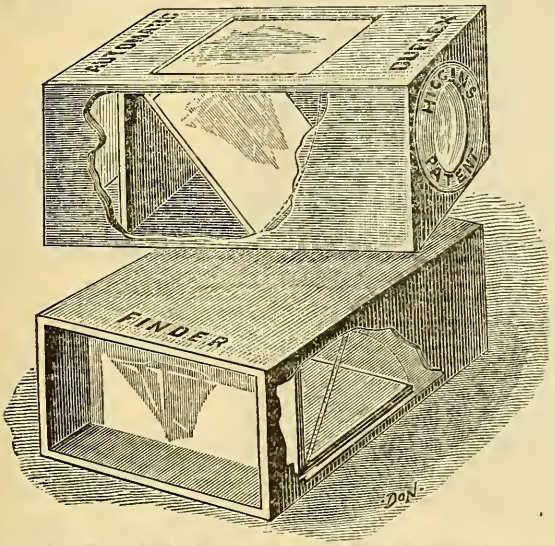
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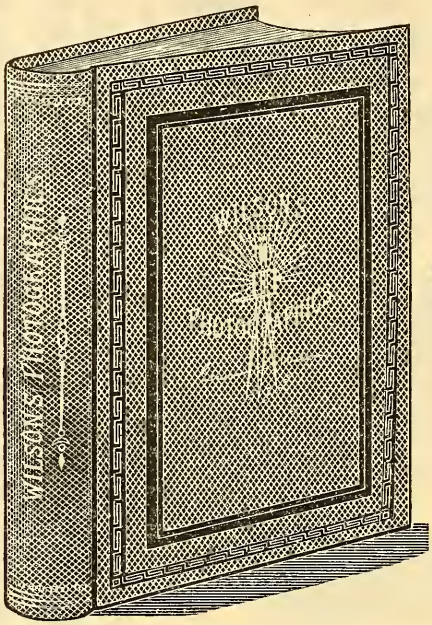
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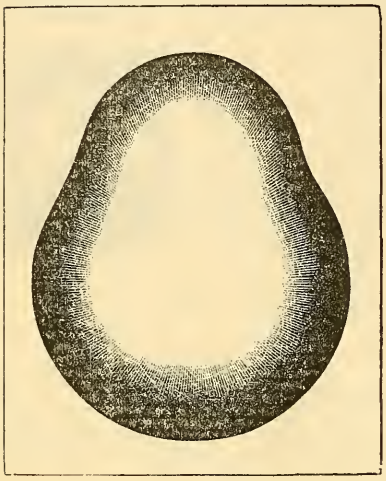
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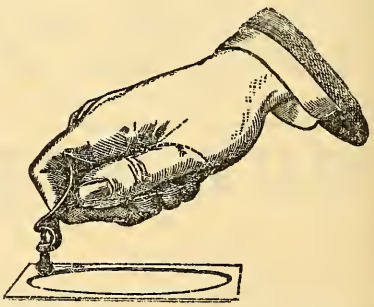
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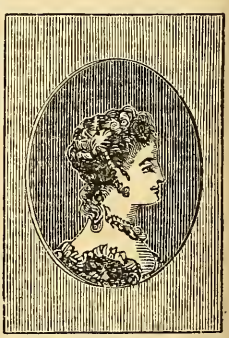
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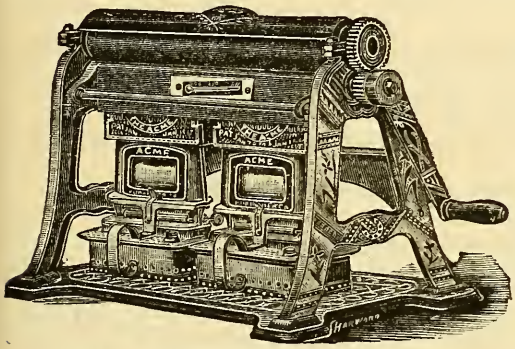
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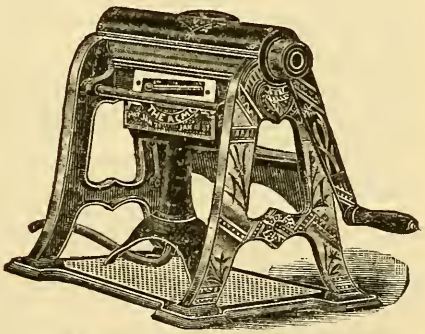
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THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. NOVEMBER 3, 1888. No. 333.

AN ARTIST'S REVIEW OF BURNET'S ESSAYS.

(From the *Studio*.)

PRACTICAL ESSAYS ON ART, by JOHN BURNET. 1. COMPOSITION. 2. LIGHT AND SHADE. 3. THE EDUCATION OF THE EYE. Arranged and Edited by EDWARD L. WILSON. New York: Edward L. Wilson, Publisher. 1888. Price, $4.

Mr. Wilson has rendered a service to artists, amateurs, and students, by the republication of these essays of the late John Burnet, which have been long out of print, and difficult to procure in their original form. He has availed himself of the new art of reproduction by photography, and by its aid has put the original book before us in *facsimile*—type and illustrations alike, and in the same form in which it was published—a convenient small quarto, with a well-opened page and ample margins: a form, it may be added, much affected in the first quarter of the century. It is an interesting coincidence, that this mode of publication should have been chosen for the works of John Burnet, seeing that he was all his life greatly interested in trying to find out processes by which the very thing might be accomplished for others, that has here been done for himself. Had he lived to see the perfection to which the art of photographic reproduction has been brought in our day, it is certain he would have discarded for the illustration of his essays the process of etching—too laborious and too expensive to permit the full amount of illustration desirable, if not actually necessary, for such books as his. And, without meaning in any way to disparage Mr. Wilson's efforts to give us a good edition of these useful treatises, we may add, that, had Burnet himself lived to have the ordering of this reprint, he would doubtless have replaced his own etchings, of no artistic value, by process-reproductions from original pictures or engravings. But Mr. Wilson's work has its own merit, and we accept it very thankfully for what it is.

John Burnet, the author of these and other valuable works on the practice of art, was a native of Scotland, and was born at Musselburgh, near Edinburgh, in 1784. He died in 1868, at the age of eighty-four, and published his last book—on Turner and his work—in 1862. He was early apprenticed to Mr. Robert Scott, the engraver, the father of the artist, David Scott, and of William Bell Scott, the critic and writer on art—author, among other books, of the life of his brother, David Scott—a most interesting, and in the best sense valuable, book, as containing the thoughts and aspirations of a true artist and noble man. In the opening pages of this book we have an account of the "engraving-manufactory," for so the author calls it, where Robert Scott, the father, surrounded by his apprentices, supplied the scanty market of the day with such material as was vendible. Perhaps in these days of formal art-schools, with all their apparatus, their professors of budding, impinging, pruning, and manuring, and their yearly crop of immature fruit, a sentence or two from the

description of Robert Scott's workshop may not be thought amiss. This workshop was in one of the apartment houses in Edinburgh which are called "lands" or "stairs;" this one was the Parliament Stairs, so called because it stood opposite to the old Parliament House. "The front of this building," says Mr. Scott, "displayed seven tiers of windows, the two uppermost being the engraving and printing premises in question. At an earlier period of their history, these lines of smoky wainscoted apartments must have been inhabited by functionaries of the Court of Sessions. Various top-closets under the beams and slates, in rooms filled with lumber and tattered transparencies of Justice and Britannia, and approached by passages apparently interminable, only illuminated by two round holes, like eyes, in each door, were filled with law papers. These parchments, all carefully folded and tied, were ranged in shelves divided into holes with their labels hanging out, just as they had been left many years before; and being at the mercy of David Scott and his brothers, when the keys could be got, the seals and the blue stamps were eagerly sought after and carried off in triumph. Even colored coats-of-arms were to be found, but these were rare and much prized, like the larger acquisitions—new plants and animals in voyages of discovery.

"So much for the palmy youth of the place. These explorings among the dusty parchments were like researches into ancient history—much more indeed; for here were real remains of the past to be made actual property. But the work actually going on there in those degenerate days has as much interest to the young visitor aspiring to be an artist. There were portraits, landscapes, and Bible prints, hanging in long lines overhead to dry; presses constantly going round and round, manufacturing more; and engravers sitting etching, cutting, and drawing. These engravers themselves were somewhat curiously disposed. The number of windows being less than the number of occupants required, a work-table running along the windows midway up, supported by strong brackets, had been invented, and chairs raised on legs nearly six feet high were adapted to the table, so that each window accommodated two tenants, one below, and one aloft.

"There were, besides, pictures and busts about the walls, nearly as dingy as themselves. The battles of Alexander, by Le Brun, were a never-failing source of attraction, and some prints from Morland beside them were visited with infinite contempt in the comparison. Among the casts were some groups that we have never seen since; one of Samson slaying the Philistines was particularly admired, and Hercules subduing Cacus, probably from the group of Bandinelli at Florence. Homer was there, from the marble then recently added to the British Museum; and William Pitt, the 'heaven-born minister.'

"Upon the whole, pilgrimage up that high and thickly-peopled *stairs* was not without its reward; and it seems to the writer as if he were rather describing some scenes of a guild in Nuremburg than a locality of yesterday at home. So does the memory consecrate common things; time and imagination endow the heads of vulgar mortals with a halo of glory, or an invulnerable helmet.

"The general produce of the manufactory, it may be readily admitted, was not of a very high order; nor was there anything done in Edinburgh of any consequence in the art of engraving till the present day. As a trade only was it followed, and in that way even it was by no means very extensive. . . . The first pupil received by Robert Scott was William Douglas . . . next, John Burnet, so well known in connection with Wilkie, as his engraver, and much more so by his writings and etchings elucidating the practice of painting."

The intimacy with Wilkie here spoken of, was formed in the "Trustees' Academy," that "earliest of British Schools of Design, or of Fine Arts either," as Mr. Scott calls it, where Wilkie and Burnet were fellow-pupils. Burnet engraved "The Jew's Harp," the first of Wilkie's pictures to be engraved, and afterwards he undertook several others: "The Blind Fiddler," "Reading the Will," "Chelsea Pensioners reading the Gazette of the Battle of Waterloo," "The Rabbit on the Wall," the "Letter of Introduction," and "The Village School. In 1813 Burnet

went to Paris with the rest of the world, and enjoyed the pictures and statues then to be seen in the Louvre. His ambition was to be a painter himself; he was not content to reproduce the works of others. He painted the "Greenwich Pensioners" at the request of the Duke of Wellington, as a companion to Wilkie's "Chelsea Pensioners," and this picture, now in the National Gallery, is the best of his not very remarkable works. Other subjects, the engravings of which are still occasionally seen, are "The Draught-Players," "A Humorous Ballad," and "A Windy Day"—but if Wilkie has hardly withstood the effacing finger of time, how could Burnet, who was but his shadow, hope to survive.

Burnet's contributions to the literature of the fine arts are more important than his pictures. Beside the essays here reprinted, he edited in 1844 a reprint of the "Discourses of Sir Joshua Reynolds." Later appeared "Letters on Landscape-painting in Oil," "Practical Essays on Various Branches of the Fine Arts, with an Enquiry into the Practice and Principles of the late Sir David Wilkie" (1848), "Rembrandt and his Work," "Hints on Portrait Painting," and "Turner and his Work."

As we have remarked, the original editions of the essays here republished by Mr. Wilson have been for some time difficult to procure. Several attempts have been made at a re-issue. Mr. Wilson, himself, has twice, he tells us, tried to publish them in serial parts, but received no encouragement. He hopes that his present effort will be encouraged, and it is certain that it should be, for no book that we are acquainted with contains anything like the amount of information on the subjects treated of, conveyed with such straightforwardness and good sense. All these are written for the purpose of teaching us how to tell a good picture, that is, a well-painted one, from a bad one. Such books usually proceed on a wrong plan. There are no general rules, nor is it likely that the authors of pictures that have been accepted by the world had any rules in mind when they were working, or could have explained why they did one thing more than another. The painters of the bad pictures knew still less what they were about, and would have been sorely puzzled to understand why people reject their work. It is not for artists especially that books such as these of John Burnet are useful. Artists cannot be taught to paint by them more than lawyers can be taught to argue by treatises on logic. When a train of reasoning has been produced the laws of logic may help to show wherein it is right or wrong, if our own wits have been insufficient for the discovery; and books like the one before us may aid in the inquiry why certain pictures please or fail to please; and, so, leading from particular examples, may sharpen our faculties for a better analysis and a more intelligent enjoyment of what we feel to be beautiful.

QUERIES, QUESTIONS, AND CONUNDRUMS.

For a long time, for the more prompt help of our readers, we have caused our stenographer and type-writer to assist us in giving personal answers to queries. The burden grows with the growth of camera-lovers, and we must again fall back on this column to help us out. We issue twice a month, and in ordinary cases that will enable us to give information to the querist in plenty of time. May we desire them to learn to depend upon it? In emergent cases, when requested, we will help quickly by a personal letter.

W. V. queries as follows: "In reading Mr. Mowrey's article on development in your magazine for September 15th, I see he gives a formula as follows:

"'Sulphite of Soda . 40 grains to 1 oz. water.
Carbonate of Soda 40 grains to 1 oz. water.'

"Then he states that he uses equal parts of soda solutions, employing an actino-hydrometer to test the strength. This, he declares, is easier than to use weights. What I would like to ask Mr. Mowrey is this: After the sodas are mixed, are they to test by the actino-hydrometer 40? I do not mean mixed together, but separate. I took 1 grain of sal soda and mixed it with 4 ounces of water, and it tested 20 by the actino-hydrometer. What is the difference between an actino-hydrometer and an actinometer? I also

doubled the amount of sal soda, and it tested a little over 30. If I take 40 grains Troy weight sal soda crystals, and 7 ounces of water, what should it test by the actino-hydrometer if it is pure?"

Answer: By Mr. Mowrey's help we are able to reply to W. V. as follows:

"I mix the sal soda solution in this way: I have two half-gallon bottles in which to keep the sulphite and sal soda. I place three or four pints of sulphite of soda in one, and the sal soda in the other, and fill the bottles with water. To make it plainer, we will call these the stock solutions of sodas. It does not matter about the strength. Now, when I make the soda solution to develop with, I pour a quantity of one of the sodas into the graduate and add water until the solution will be exactly 40 grains of soda to the ounce of water, whether you have a pint or a barrel. When it is of the right strength pour it into a bottle kept for the purpose, then take the other solution and do the same; test it to 40, same as the other, and then have the same number of liquid ounces. Now we have two solutions of equal bulk, both 40 grains to an ounce of water. Mix these two together, and you have a soda solution, or the No. 2 of the developer that I printed. By mixing in this way one saves time, and secures uniformity of strength.

"I do not use actinometers, but prefer actino-hydrometers, which are intended for determining the specific gravity of liquids, or that of solid bodies, and are graduated to grains, while the others are graduated to degrees. For example, take 40 grains by weight of sal soda and dissolve in 1 ounce of water: the actino-hydrometer will register exactly 40. If you put in another 40 grains by weight of the same solution, it will test 80 grains to an ounce of water. I should judge by W. V.'s experiments, if he used the actinometer to make his printing bath, it must be 120 grains strong, instead of 60, to the ounce of water. The more I use my developer the better I like it. I use Seed plates to make my exposures very short, and have no trouble in making first-class negatives. I use only the ruby copper-flash glass, and develop at night by lamp light; it never hurts my eyes. I think a good many eyes are injured by operators having the light in their eyes; it should enter to them from one side."

Mr. S. J. C., an amateur, wishes to know what is meant by intensity, and "how shall I know it when I see it? What do you consider a highly contrasted subject?"

Answer: By intensity we mean strength —the reverse of flatness, or weakness in a negative; and by a highly contrasted subject we mean one where the blacks and whites are both intense; that is, strong; very black and very white. Such a negative is not considered a good one. There should be gradation in every negative of the half-tones, or lights and shades; varying from black to white, with all the delicate tints between the two scattered here and there. A negative should always be sufficiently intense to make it of good printing quality, but should never be what is generally known as "cast iron," or too black and too white.

L. L. inquires: "Which is the best method of making albumen prints lie flat and smooth? I have tried burnishing them under card-board, but invariably get them creased, and consequently spoiled.

"Which is the most simple way of labelling a negative, so that the reading may be seen on the finished prints, and have it reproduced in white letters on every print?"

Answer: First. Our English friends use the old Mowrey bed-plate press for rolling or smoothing their prints, and making them lie flat, and sell them unmounted under the name of scraps. Perhaps some of our correspondents can tell us how to secure the same end by means of burnishing. A good way to make them lie flat is to place them between card-boards. See that the printer is very careful in adjusting, and then draw them through the burnisher.

Second: The best way of labelling negatives, such as we have practised for many years, is to purchase at the stationer's what is known as onion-skin paper, a tough tissue-paper free from holes and punctures. Upon this print with good black ink the title of the picture in bold-face type; use stiff printing-ink, printed very full, so as to show black on the reverse side of the paper. Then bronze the letters over with copper bronze. This

makes them very opaque. When dry, immerse the label in ferrotyper's varnish, and then, with a camel's-hair brush, quickly and neatly transfer it to the proper place on the negative. Thus the title can be printed white, and clear, and sharp.

S. L. inquires how to avoid strong lights in negatives. Mr. Rockwood gives us his method as follows: He colors Hance s ground-glass substitute with either strong yellow or red aniline, mostly dissolved in alcohol will do, and with this cover the glass side. While it is still damp, with the finger wipe off such particles as are not needful, to protect the negative from dust, and then use the coated glass when dry in printing. In this way the white parts of the negative are prevented from over-printing.

H. T. M. inquires, first: "Give best directions for making solar prints (in silver) on crayon paper and artist's canvas. Second: Direction for making negatives direct from negatives on dry plates or wet plates."

Answer: First, H. T. M. asks too much for a simple answer in this column. If he will refer to Wilson's *Photographics*, page 301, he will learn a good deal about enlargements on canvas; perhaps all that he wants to know. The chapter is pretty thorough for all sorts of enlargements.

Second. The proper way to multiply a negative is first of all make a positive, and from it make a duplicate negative. The best and most recent method for doing this is given by Mr. Wilkinson in his new book on photo-engraving, and it has been frequently repeated in our magazine within the past year.

A GREEN AMATEUR, confessing his ignorance by means of *nom de plume*, asks the best method for "holding in" Mr. Carbutt's "Eclipse" portrait plates, and complains that they get ahead of him all the time.

Answer: He ought to know from the formula Mr. Carbutt gives him how to manage them, but we repeat the method given by Mr. Carbutt for the public good, as follows:

The following stock solutions should be prepared with care from pure materials, es pecially the water. Do not use cistern rain water—it contains too much organic matter:

No. 1 Pyro Stock Solution.

Distilled or Ice Water .	10 ounces.
Sulphuric Acid . . .	½ fluidrachm.
Sulphite of Soda, Crystals	2 ounces.

When dissolved test with blue litmus-paper; if it does not turn red, add a few drops more acid until it does. Then add Schering's re-sublimed pyro one ounce, and water to make sixteen fluidounces.

No. 2 Stock Soda Solution.

Water	10 ounces.
Soda Sulphite, Crystals .	4 "
Soda Carbonate, Crystals (or dry granular 1 ounce) .	2 "

Dissolve and add water to make measure sixteen fluidounces.

For large galleries, dilute with water to make eighty fluidounces, and label "Dilute Soda Solution."

No. 3 Bromide Solution.

Bromide of Sodium or Potassium	½ ounce.
Water	5 ounces.

Developer.

Dilute sufficient of No. 2 to meet the requirement for the day's work, or the number of plates to be developed, by adding 8 ounces of water to 2 ounces of stock No. 2. To 3 ounces of dilute No. 2 add 1½ to 2½ drachms of No. 1. The more pyro the denser the negative, and *vice versa*. 1½ drachm No. 1 to above quantity of No. 2 diluted, has been found to yield portrait negatives of perfect wet-plate quality and quick printers. No yellowing or fogging need be apprehended if our directions are followed. Development should be continued until the image seems almost buried, then wash and place in the

Hardening and Clearing Bath.

Chrome Alum . . .	½ ounce.
Citric Acid . . .	¼ "
Water	36 ounces,

for not less than two minutes. Wash under the tap, and place in the

Fixing Bath.

Hyposulphite of Soda .	8 ounces.
Water	40 "

Let remain two or three minutes. After the negative is cleared of all appearance of silver bromide, wash it in running water for not less than half an hour, to free from any trace of hypo solution. Swab the surface with a wad of wet cotton, rinse, and place in rack to dry spontaneously.

For instantaneous exposure take for a 5 x 8 or 6½ x 8½ plate 3 ounces of dilute No. 2. Lay the plate to soak in this, and cover pan. Put 2 drachms of No. 1 into the graduate, and two drops of bromide solution. Pour the soda solution off of the plate into the pyro, and back over the plate; let development proceed, and examine occasionally. Keep solution in gentle motion over the plate. A *very* short exposure may take ten minutes to fully develop. If the image is not fully brought out in this time add to developer in pan three times its bulk of water, and let the plate lie in it covered over for half an hour or more, if necessary, until full development is attained, then wash, and proceed as directed under head of developer.

We caution our readers against employing this method for other plates. Every manufacturer of plates is supposed to know how best to make them produce their best results, and we believe in following their directions, with such modifications as changes in temperature and time cause us to feel at the moment of working. This matter of feeling, nobody can communicate to another; it must be gathered in by long practice.

PHOTOGRAPHIC REFERENCE LIBRARIES.*

BY C. W. CANFIELD.

It would scarcely seem necessary to demonstrate the usefulness and advantage to the ordinary photographer of reference libraries containing the principal works relating to the art in which he is interested. Nevertheless, one would have difficulty in pointing out any complete collection worthy the name in this country: At least the public libraries, so far as known to the writer, are poorly supplied. Take the catalogue of the Astor Library, for instance, the largest reference library in New York city, and you will find scarcely half a dozen titles: *The American Annual*, *The Photographic Amateur*, and odd volumes of the *Photographic Times*, PHILADELPHIA PHOTOGRAPHER, and *Bulletin*. These are well enough, so far as they go, but that is not far enough.

The photographic section of the American Institute, New York, has quite a number of works relating to photography, especially back numbers of photographic periodicals, including a complete set of the PHILADELPHIA PHOTOGRAPHER, but even the members do not consider it in any sense complete, as evidenced by the discussion, two or three years since, on the subject of "a photographic library."

The comparatively young Society of Amateur Photographers has a growing library, amounting to nearly two hundred titles at the last indexing; but these have been brought together in a miscellaneous way, and there has been no especial selection exercised.

As years go by, "out-of-print" books on photography become more scarce, and harder and harder to find; and it should be the one object of every photographic society to gather together a good library of reference books for the use of its members and others interested in the subject. It will probably answer the purpose of most societies if they keep on file one or two of the chief journals of their country or locality, with a few works of the standard writers, like Abney in English, Eder, in German, or Davanne in French.

An excellent thing for all societies to do is to publish a list of the works in its library, for the use of those who are working in the field of bibliography; members contribute old books from their stock, others come in in various ways, and it may easily be that out-of-the-way things are thus occasionally found, which the published lists would make known.

Mr. W. Jerome Harrison has, during the last two years, rendered a great service to those interested in photographic literature, by publishing a very complete and exhaustive bibliography of photography, so far as England is concerned; and the writer has in preparation a list of American books on

* Written for *Mosaics*, 1889, but received too late.

photography, and will much appreciate any assistance from others interested. Probably others are at work, or will be before long, for French and German books, and, in time, the ground will all be covered.

[*Translated for the Philadelphia Photographer.*]

SOME TRIED RECEIPTS.

(German.)

THE dispute among photographers concerning whether the wet-collodion process is preferable to the gelatine-emulsion process, or the reverse, seems to be settled. Portrait and landscape photographers have undertaken to convert their colleagues of the reproduction branch, and to win them over to the gelatine process, and the reproducing artist acknowledges willingly the great advantage of the gelatine emulsion process, but continues to work when treating "rest pictures" with a graphic purpose in view, with collodion and silver bath. Why? Collodion negatives give much more exact and sharper copies than gelatine matrices, in consequence of the physical development, as it takes place in the collodion plate, the picture lies above the collodion layer, while, owing to the chemical development in the gelatine plate, it sticks to the layer.

If we now give some excellent receipts for the collodion process, it may be understood with certainty that something can be done with these receipts, for some of the greatest reproduction institutes work according to them.

The receipts are as follows:

Plain Collodion.—This is formed in the usual way, by adding 50 parts of absolute alcohol, 50 parts ether, and 2 parts collodion wool (gun cotton), and putting aside for use in high glass stands. Then mix:

Bromide of Cadmium	.	80 grammes.
Iodide of Potassium	.	160 "
Iodide of Ammonium	.	160 "
Iodide of Cadmium	.	240 "

These ingredients are dissolved in 200 grammes distilled water and 1500 grammes absolute alcohol.

Iodide tincture.—This contains:

Iodide of Potash	.	12 grammes.
Free Iodine	.	1 gramme.

dissolved in 100 grammes distilled water and 50 grammes absolute alcohol. Keep in glass bottles with corks.—*Mitarbeiter.*

WHEN LIGHT PRINT NEGATIVES DARKEN AFTERWARD.—Herr O. Pustet, who, sometime ago, published in our journal an article upon the after-darkening of copied collodion negatives, has lately informed us that he has found a process by which the original transparency of a darkened collodion layer can be obtained. According to his method, a collodion negative when it has become, after the pouring on of the gelatine proof-sheet, either partly or wholly dark, can be brightened in this way: The collodion layer can be washed away from the copied negative by means of ether and absolute alcohol, and the negative covered anew with thin plain collodion. Since, in a collodion negative (owing to the physical development), the silver precipitate is not found *in* but *upon* the collodion layer, therefore, in regard to further reproduction from the glass, the gelatine poured upon it comes in immediate contact with it, and, owing to its adhesive properties, is retained, so the process appears at least plausible.—*Mitarbeiter.*

UNDER the heading "Questions and Answers," in the *Mitt.*, an inquirer states that of two brom-silver gelatine plates reduced with red-blood alkali, one was bluish, the other had blue spots on it. In reply, it is said that at some time the plates had been developed with iron oxalate, and that the developer had not been thoroughly washed out. In consequence of this the alkali formed a combination with the iron, resulting in the Turnbull blue.—*Mitarbeiter.*

CHEMIGRAPHY.—Etching-acid receipt:

Water	.	2770 c.cm.
Raw Concentrated Nitric Acid	.	3800 "
Concentrated Solution of Crystallized Salammoniac		650 "
Acetic Acid	.	850 "

GOOD—BETTER.—We have had occasion to advise in photographing pictures of bright metal objects, that the shining metal surfaces be previously depolished. Our re-

marks had reference to small metal industrial articles, which could be dipped into a wide-necked bottle filled with weak varnish, by means of a small steel hook.

Mr. Theodore Reich gives us an additional point in regard to this matter, which answers the purpose as well, if not better, and also much simpler. Herr Reich uses a dusting and shellac solution (such as is used for the fixing of crayon or charcoal drawings). He simply blows the solution through the glass tube of the disperser upon the bright metal surfaces, which are exposed to the falling light, and thus depolishes them to any desired degree.—*Mitarbeiter.*

An interesting experiment was undertaken in St. Petersburg, on a drill day; it was a balloon photograph taken with three newly constructed military air-balloons. The gentlemen ascending in these received the order to sail away above the manœuvre field and, when at a given height, to make a halt, and there to photograph the fighting troops. The æronauts, all officers, found they could effect their purpose best by sailing the balloon somewhat sideways. —*Mitarbeiter.*

A FEW WORDS ABOUT BROMIDES.

Of late there has been a little discussion about bromide in the developer. A general concensus of opinion seems to agree that its use is indispensable, especially for summer work. A certain correspondent of this valuable journal seems to hold tenaciously to the theory that bromide of sodium should be preferred. I, for one, fail to see why it should be so. I think that it depends, in a great measure, on what alkali is used as the accelerator itself. For instance, were I to develop with ammonia, I would add bromide of ammonium.

In using Hoover's potash developer, I have observed that when bromide of ammonium is added, a perceptible odor of ammonia is given off, and, furthermore, it seems to have a tendency to color the fibre. Bromide of potash works better. I should certainly think of using bromide of sodium in soda developer, and so forth.

In preparing emulsions, some favor bromide of ammonium, for the main reason that it is so easy to wash away the excess of bromide, as well as the resulting nitrate of ammonia. Very probably the nitrate of ammonia is decomposed and drawn off. Those of us who have studied chemistry at school know that, on heating, nitrate of ammonia is decomposed into water and laughing gas. Therefore, it follows in theory that very little washing is necessary when ammonium is used. On the other hand, the best authors, like Abney and Eder, maintain that bromide of ammonium does not keep, and they both prefer the potassium salt.

A great deal has been said about pyro not keeping in solution. Well, I am no theorist, but practically I do know that pyro, in Hoover's formula, keeps long enough for all practical purposes, say six months, and that is long enough for any of us who do even very little work, and it seems to develop very well at that. It would be a very nice thing for those theorists who love to air their remarks in the journals to keep all their ideas down till they prove them by practice, lest they do irreparable mischief to their pupils.—*An Old Contributor.*

HOW TO CLEAN AN OLD DAGUERROTYPE.*

BY FRANK M. PICKERILL,
Iowa City, Iowa.

Frequently a photographer has an old daguerrotype to copy, and he finds it covered with spots (mercury), or, if the glass over it has been broken, a brownish-white streak. It can be made as good as when first taken, by the following treatment:

Take the plate in your left hand and a small pair of plyers in your right, turn the corner of the plate up, then down, making a curve so that the solution will not run off on the plyers. Now have ready a spirit (alcohol) lamp. First put soft water on and apply heat gently; if the water runs as though the plate was greasy, take a soft

* Written for Photographic Mosaics, 1889, but received too late.

camel's-hair brush and trace the water all over. As soon as the water gets a little warm it will stick all over the plate; pour off water first. Now pour over the plate a weak solution of cyanide of potassium (poison). Again apply the lamp until the spots and streaks disappear; if they are stubborn, take the camel's-hair brush and gently rub over them, and they are bound to "git." Now wash the plate well under a tap, then apply the lamp to the upper left-hand corner, and when it commences to dry downward (hold the plate in an angular position) commence blowing your wind upon it, and never let up until it is all dried down, for if you stop, your plate will be streaked right where you catch your breath.

This is worth a horse to any photographer, but I will charge you only—one long blow.

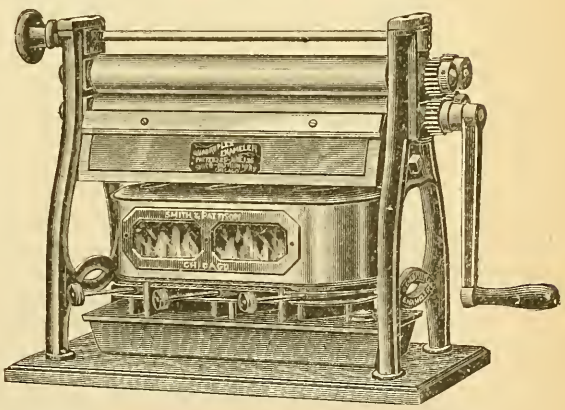
OUR PICTURE.

THE embellishment of our current number is from negatives reduced from an 8 x 10 negative made by Mr. George Barker, of Niagara Falls, and is a winter view of the American Falls, including what is known as Prospect Point.

It is hardly worth while for us to say a single word with reference to the quality of Mr. Barker's work. His fame is world-wide. He has been awarded almost a dozen first-prize medals; received the special prize in Germany in 1886; the gold medal in St. Louis in 1886; the grand diamond badge at Chicago in 1887; and a premium for his splendid interiors, and a gold medal at the Minneapolis Exhibition. His pictures of Niagara, Florida, and other American scenery, have been carried to all parts of the world. There is no more persistent or more excellent photographer than he is. We have known him to try twenty different times, each time carrying a 20 x 24 outfit to the foot of the splendid subject, in order to obtain a view of the "Cave of the Winds" and surroundings, not succeeding, according to his mind, until the twentieth effort had been made. Such is Mr. Barker's character. The evidence of his artistic taste is shown in the present picture—in all he does.

Everybody has written about Niagara Falls, except us, and we do not expect now to begin. When we look upon such a picture as this, and at this particular subject, we always regret that we had not first seen the great American Falls differently from what we did in the beginning. Our idea now is, that the proper way to come upon it is to begin the journey at Lake Ontario, and, coming up the Niagara River, first approach the grand, turbulent water at the whirlpool, passing this with the roar in your ears, under the grand suspension bridge, up through the narrow and deep glen along which the water of the Falls proper swirls on its way to the whirlpool, and thus reach the great cascade; but we desist. The best impression of the height of Niagara Falls is obtained by standing at the foot of the American Falls at the terminus of the inclined plane. Then, as the water leaps over the brink, if it is watched as it descends slowly, foot by foot, until it breaks into spray, the mind thus obtains the best impression of the height of the glorious volume of water.

We do not know how many subjects of Niagara Mr. Barker has obtained, but being on the spot, ready for any favorable light or lovely cloud effect, he must have



tens of thousands. His negatives all have a richness and roundness which is individual, and which we commend as an attainment, to all who follow the camera out of doors. The prints were made for us, as usual, by Messrs. Roberts & Fellows, now 1305 Arch Street, Philadelphia, Pa., upon the N. P. A. paper imported for us by Messrs. E. & H. T. Anthony & Co., 591 Broadway, N. Y. City.

Much of their richness and delicacy of tone is due to the burnishing. For this the popular quadruplex enameller of Messrs. Smith & Pattison, Chicago, was used. It is a very superior machine, easily regulated, new in design, beautifully finished, and quickly heated. No lubricator is used with it, and yet, strange to say, no scratches occur. Thus it helps to make our picture a beautiful lesson in art work, albumen-paper printing, and in finishing.

THE OPEN CORNER.

Among the numerous photographs of celebrities in Rubinstein's album, there is one to which the composer attaches especial value, and which he delights in pointing out to his friends—it is that of his first paying patron. The history of this photograph is thus given in the words of the musician: "It was in the days of my youth. I had just advertised my first concert in a town in Poland. I had been posted at the ticket office since the morning without any other result than a feeling of deep despair. Just as I was preparing to leave I saw an old Jew approach me. He asked for six tickets, and threw down a ruble on the desk. My joy was boundless, and some years later, when passing through the same town, I had the good fellow photographed, and I keep his portrait as a souvenir of my first struggles."

Metrical Weights and Measures.—The introduction of the metrical system into photography is not going to please everybody, but in order that everybody may be pleased or at least nobody displeased, the Cramer Dry-Plate Co., with their usual enterprise, have issued a circular with their formulas given in metrical terms. We append it for the benefit of those who would like to use it.

Proportions Given in Metric Weights and Measures.—

Alkaline Solution.

Water	2 litres.
Sulphite of Sodium Crystals	140 grammes.
Carb. of Sodium Crystals (Sal Soda)	35 grammes.

Pyro Solution.

Water	150 c.cm.
Sulphite of Sodium Crystals	4 grammes.
Sulphuric Acid	1 c.cm.
Pyrogallic Acid	30 grammes.

An ounce is equal to about 30 grammes.

A drachm is equal to about 4 cubic centimetres.

Fixing Bath.

Hyposulphite of Soda	500 grammes.
Water	4 litres.

Hot-Water Bath.

Hyposulphite of Soda	1 kilo.
Powdered Alum	1 kilo.
Bicarbonate of Soda	250 grammes.
Water	8 litres.

Intensifying Solution.

Saturated Solution Bichloride of Mercury,	
Iodide Potassium.	40 grammes.
Water	180 c.cm.
Hypo	30 grammes.
Water to make up to	600 c.cm.

Reducing Solution.

Red Prussiate of Potash	30 grammes.
Water	500 c.cm.

Hypo Solution.

Hypo	30 grammes.
Water	500 c.cm.

How Do Others Manage?—This question comes to us almost every day with reference to proofs. We reprint the following circular as one of the methods with which we are acquainted and which comes to us from a very reliable source:

Important Concerning Proofs and Extra Negatives.—When uncertain as to which may be the best possible pose of the sitter, we often make two negatives, in order to select the one most satisfactory in all points. For this we make no extra charge, but submit all for a *choice*. If, however, more than one proof is selected, a charge of *one dollar* is made for the *finishing* or *retouching* of *each extra* negative. Every negative is retouched before photographs are printed from it, giving to each picture a fine artistic finish. In an order for one dozen pictures,

it is intended to finish but *one negative*, unless under the conditions named.

Will you kindly return *all* the proofs furnished you for examination? A compliance with this request is *necessary*, that your order may be filled from the right negative, and that no "unfinished pictures" be out of the establishment. *Proofs are no part of an order and are the property of the undersigned.*

Orders will not be completed or resittings made until all the proofs are returned.—GEORGE G. ROCKWOOD, 17 Union Square, New York.

THE CAMERA AGAINST THE GUN.—Some time ago we alluded to the reprinting of an article from *Forest and Stream*, with this title, and promised to make some extracts from it. It was reprinted in *The Photographic Times*. We learn that Mr. Ernest Ingersoll, the author, is still pounding away on the same subject, and with a good deal of success. We have known of several instances this summer where expert killers have gone to the forests and streams with gun, fishing-rod, and camera, and in some cases have come home with the gun still loaded and with the fishing-line unreeled, having become so fascinated with the camera as to devote their entire time to it. If this thing continues we predict that the game will become educated, and stand as peaceably as a house-dog for the pleasure and profit of the camera enthusiast provided he continues to keep the gun and hook out of sight. Mr. Ingersoll says among other things—though we need no excuse from him for writing as he does—as follows:

It is in the hope that a few guns, at least, may be succeeded by cameras; that a little of the self-complacency of the gunner may be shaken by the testimony of the real sport to be had in getting the pictures of the wild animals on their native heath, instead of "collecting" their hides and horns immoderately, that I welcome the story I have recounted of photography in our National Park. Mr. Hofer is, I believe, a sportsman of skill and reputation; yet he writes: "Often while hunting to kill, I would have preferred a picture of the game I have seen, to the meat. Many a hunter of large game would rather have a photograph of groups of elk, deer, antelope, sheep, buffalo, and bear, and of the mountain scenes that are familiar to him, than have the pleasure of killing." This I am glad to believe, is true; and I wish I could do more now—I wish somebody had done far more long ago, before our large animals were extinguished in places where they still ought to be seen—to induce sportsmen to leave their enjoyment of the chase unblemished by blood, were no real utility is to be served. It ought to be beneath the pride of a civilized man to glory in the taking of life merely to show his skill. It ought to shame any intelligent citizen of Christendom to contemplate with satisfaction the agony of a mortally wounded animal, and acknowledge to himself, if not to me, that the splendid vigor of open-air life, the inspiration of woods, or breezy prairies, or trackless mountain-heights, the cunning and noble demeanor of the game, which it made his heart glow to overtake and look at, were not enough; but that his real joy came in assassination, when his prey suspected nothing, and had no chance for his life, or in cutting it down, when another moment would have made it safe from pursuit.

Yet in the annals of sport and camp-life you can find many an example of Christian leaders and ministers of the Gospel putting themselves in this position. The Adirondacks have seen many a clergyman "jacking" for deer; that is, stealing upon the defenceless animal when he came down at night to drink at the lake. A fire of burning pine-knots is made in an iron-basket in the bow of a canoe. The deer, wild-eyed and statuesque, stands half immersed among the lily-pads, half lost in the shadows of the motionless trees. He is spell-bound by that strange glare on the water, which slowly and noiselessly approaches, so strangely and so silently, that he takes no alarm. It is a thrilling moment for the man in the canoe. Pulpit and parish are forgotten. He has preached many a sermon against deception, and condemning cruelty—but these are forgotten. He has told his Sunday-school that it is a sin to rob birds' nests and torture pets; that not a sparrow falls to the ground without the Father's

notice—but this is forgotten. The pine-knots flame and a dense cloud of smoke melts into the darkness. Crouched in the bow, he can discern across the yellow glare on the ink-black water the graceful outlines, the uplifted head, the branching horns, the distended quivering nostrils, the great jewel-eyes of the deer. He can almost see the beating heart palpitating under the velvety skin. Then he slowly pushes forward his rifle, aims straight between those shining orbs, and pulls the trigger. The lake rings with the sharp report. The trees quiver as if suddenly awakened. The hills reverberate the shock. A shrill snort of deathly pain pierces the ear, and with a shout, the minister and his guide dash forward to where the splashing animal struggles in the bushes. Is he dead yet? Not often. Where is he? Escaped to the woods. To-morrow he may be traced by his blood, and found, perhaps, miles away, dead or dying. Or, perhaps, he is driven out into the water, is overtaken by the canoe, and the man of God draws a knife across the white throat.

Suppose that minister and his guide, cautious and skilful, had crept up to the waiting deer, as I have described. The beauty and excitement would all be there. He gets close in and is yet undiscovered. There is a flash, as before, but it is a flash of magnesium-light; and, as the startled animal crashes back into the safety of the trees, the enthusiast shuts up his camera with the exclamation: "Ah, Joe, I think we got him that time!"

Will that hunter have any the less adventure to talk of; any poorer sleep when he lies down upon his bed of boughs; any less valuable trophy to exhibit; any less credit in the books of Heaven, than if he had robbed the beautiful animal of life, instead of stolen its portrait?

METRICAL MEASURING.

Falling in with the desires of the day we print the tables below. They were carefully prepared, and will be found reliable for photographic use.

Table for Converting Cubic Centimetres into Fluidounces, Fluidrachms, and Minims.

Cubic Centimetres.		Fluid-ounces.	Fluid-drachms.	Minims.
1	=	...	...	16
2	=	...	...	32
3	=	...	...	49
4	=	...	1	5
5	=	...	1	21
6	=	...	1	37
7	=	...	1	54
8	=	...	2	10
9	=	...	2	26
10	=	...	2	42
15	=	...	4	3
20	=	...	5	25
25	=	...	6	46
30	=	1	0	7
35	=	1	1	28
40	=	1	2	49
45	=	1	4	10
50	=	1	5	31
55	=	1	6	52
60	=	2	0	14
65	=	2	1	36
70	=	2	2	56
75	=	2	4	13
80	=	2	5	38
85	=	2	7	...
90	=	3	0	20
95	=	3	1	42
100	=	3	3	3

1000 c. c. = litre = 34 fl. oz. nearly, or $2\frac{1}{8}$ pints.

Rules for Converting the Centigrade Scale into the Fahrenheit Scale.

If above the freezing point of water (32°) degrees $\times$ 9 $\div$ 5 + 32.

If below the freezing point and above zero, 32 — (degrees $\times$ 9 $\div$ 5).

If below zero, — (degrees $\times$ 9 $\div$ 5).

Relation of Metrical Weights to Troy Weights.

Metrical Weights. Milligrammes.		Equivalents in Grains.		Equivalents in Grains.
1	=	.0154	.....	$\frac{1}{65}$
2	=	.0308	.....	$\frac{1}{32}$
3	=	.0463	.....	$\frac{1}{22}$
4	=	.0617	.....	$\frac{1}{16}$
5	=	.0771	.....	$\frac{1}{13}$
6	=	.0926	.....	$\frac{1}{11}$
7	=	.1080	.....	$\frac{1}{9}$
8	=	.1234	.....	$\frac{1}{8}$
9	=	.1389	.....	$\frac{1}{7}$

Metrical Weights. Centigrammes.		Equivalents in Grains.		Equivalents in Grains.
1	=	.1543	.....	$\frac{1}{6}$
2	=	.3086	.....	$\frac{1}{3}$
3	=	.4630	.....	$\frac{6}{13}$
4	=	.6173	.....	$\frac{7}{11}$
5	=	.7717	.....	$\frac{3}{4}$
6	=	.9260	.....	$\frac{9}{10}$
7	=	1.0803	.....	1
8	=	1.2347	.....	$1\frac{1}{4}$
9	=	1.3890	.....	$1\frac{1}{3}$
10	=	1.543	.....	$1\frac{1}{2}$
20	=	3.086	.....	3
30	=	4.630	.....	$4\frac{1}{2}$
40	=	6.173	.....	6
50	=	7.717	.....	$7\frac{1}{2}$
60	=	9.260	.....	9
70	=	10.803	.....	11
80	=	12.347	.....	$12\frac{1}{2}$
90	=	13.890	.....	14
100	=	15.433	.....	$15\frac{1}{2}$

Metrical Weights. Grammes.		Equivalents in Grains.		Drm.	Grs.	Oz.	Drm.	Grs.
1	=	$15\frac{1}{2}$	=	...	...	...	...	...
2	=	31	=	...	...	...	...	...
3	=	46	=	...	...	...	...	...
4	=	62	=	1	2	...	...	...
5	=	$77\frac{1}{2}$	=	1	$17\frac{1}{2}$	...	..	...
6	=	$92\frac{1}{2}$	=	1	$32\frac{1}{2}$	...	...	...
7	=	108	=	1	48	...	...	...
8	=	$123\frac{1}{2}$	=	2	$3\frac{1}{2}$	...	...	...
9	=	139	=	2	19	...	...	...
10	=	$154\frac{1}{2}$	=	2	$34\frac{1}{2}$	...	...	...
11	=	$169\frac{1}{2}$	=	2	$49\frac{1}{2}$	...	...	...
12	=	185	=	3	5	...	...	...
13	=	200	=	3	20	...	...	...
14	=	216	=	3	36	...	...	...
15	=	231	=	3	51	...	...	...
16	=	$246\frac{1}{2}$	=	4	$6\frac{1}{2}$	...	...	...
17	=	262	=	4	22	...	...	...
18	=	277	=	4	37	...	...	...
19	=	293	=	4	53	...	...	...
20	=	$308\frac{1}{2}$	=	5	$8\frac{1}{2}$	...	...	...
30	=	$462\frac{1}{2}$	=	7	$42\frac{1}{2}$	...	...	...
40	=	617	=	10	17	= 1	2	17
50	=	$771\frac{1}{2}$	=	12	$51\frac{1}{2}$	= 1	4	$51\frac{1}{2}$
60	=	926	=	15	26	= 1	7	26
70	=	1080	=	18	34	= 2	2	...
80	=	$1234\frac{1}{2}$	=	20	$34\frac{1}{2}$	= 2	4	$34\frac{1}{2}$
90	=	1389	=	23	9	= 2	7	9
100	=	$1543\frac{1}{2}$	=	25	$43\frac{1}{2}$	= 3	1	$43\frac{1}{2}$
1000	=	1 kilogramme	=	32 oz. Troy.				

Table for Converting Millimetres into Inches and Fractions of an Inch.

Millimetres.		Inches.	Millimetres.		Inches.
1	=	$\frac{1}{24}$	22	=	$\frac{7}{8}$
2	=	$\frac{1}{12}$	$23\frac{1}{2}$	=	$\frac{11}{12}$
3	=	$\frac{1}{8}$	$25\frac{1}{2}$	=	1
4	=	$\frac{1}{6}$	51	=	2
$6\frac{1}{2}$	=	$\frac{1}{4}$	76	=	3
$8\frac{1}{2}$	=	$\frac{1}{3}$	$101\frac{1}{2}$	=	4
$9\frac{1}{2}$	=	$\frac{3}{8}$	127	=	5
$10\frac{1}{2}$	=	$\frac{5}{12}$	152	=	6
13	=	$\frac{1}{2}$	178	=	7
15	=	$\frac{7}{12}$	203	=	8
16	=	$\frac{5}{8}$	$228\frac{1}{2}$	=	9
17	=	$\frac{2}{3}$	254	=	10
19	=	$\frac{3}{4}$	$279\frac{1}{2}$	=	11
21	=	$\frac{5}{6}$	305	=	12

To reduce Millimetres to Centimetres, divide by 10.

1 Metre = 39.37 inches.

1 Kilometre = 0.62137, or $\frac{5}{8}$ of a mile.

—From *Wilson's Photographics.*

A PRINTER'S CONFAB.

If there is one department of photography that has had more attention from experts who write for the photographic press, than another, it is the printing department. With all this one would think that the modern printer could scarcely go wrong in any direction, and yet our correspondence proves to us every day that there is trouble in the printing-room. We have before us now a selection from the letters received recently concerning very important errors which some of the writers have fallen into, and propose to make them, with the answers we send in response, the subject matter for this confab.

The first letter comes from Ohio, and says: "We are in trouble, and do not know how to get out. The inclosed prints will show what is the matter. They are measley, flat, and gray, and, do what I will, I cannot overcome the evil. I understand that the reputed cause of the strange appearance is that the paper has not been floated sufficiently long on the bath; but the paper on which the prints I inclose were printed was floated fifteen minutes upon a sixty-three grain bath, neutral, with a temperature not

less than seventy degrees. Under the same conditions I also silvered paper three minutes; the result was exactly the same. Yesterday was a beautiful day, and warm, so that we needed no fire. My partner expressed the opinion that the cold weather was, perhaps, the cause of our trouble. So I took advantage of this warm day to test the matter. Four pieces of paper were floated upon a neutral bath sixty grains strong respectively, four, five, six, and seven minutes. They printed all right with the exception of a piece floated four minutes, which had the apearance of being silvered too long; the image appeared sunken in the paper. I thought, well, I have got you this time; so I silvered a lot of paper, floating it five minutes. I had to throw about one-third of it away on account of the mottled appearance which you observe on the prints I send. I have been eleven years in the business, and never saw this trouble before, and as a rule have not floated my paper over four minutes. Can you give me any information that will help us?"

Answer: Our correspondent was suffering from a contaminated bath. After boiling it down and making over fresh he would find it work. It is unnecessary to float longer than two minutes on a bath of proper strength and purity. But baths are very much like grown folks; if they are overworked they begin to show weakness, and what work they produce loses character. It may also be that our correspondent has not fumed his paper sufficiently. The two points we have mentioned always need careful looking after.

A correspondent from New York State sends us a batch of prints the color of a dried autumn leaf—not a New Hampshire leaf, but a New York park leaf—insipid, and yellowish-gray, with no snap, and looking as disagreeable as prints could well look. He writes as follows: "I inclose herewith a sample print from a spoiled batch. I cannot solve the mystery. It was printed on the Eagle brand of paper, floated on a fifty-grain bath two minutes, and fumed ten minutes. It was washed in four waters, reddened a very little with salt, and toned to a deep purple with sal-soda; fixed with sweet, fresh hypo, strength one ounce to ten; washed for one or two hours, and left over night in plenty of water. In the morning behold the result!"

Answer: It is strange that people working in photography daily, year in and year out, have so much trouble in manipulating albumen paper. It is very evident in this case that our correspondent did not fix his prints in hypo at all, or if he did, there was a very slight proportion of hypo in the solution—less than he states, evidently. We tore his print in two and refixed one half; although not a perfect print, the difference is very great. In one the transparency is complete, while in the other the mottled appearance continues. Of course the print could not be made white because the silver continued to decompose, but our experiment makes us believe that we are correct in judging his case.

A correspondent from Missouri sends us a large picture on albumen paper. The surface of it seems to have been entirely destroyed, and in some places there are large spots which seem to have scarcely any albumen left upon them. The gentleman represented upon the print is standing in a senatorial attitude, and seems determined to present a good appearance, no matter if his picture does make him look as though he had just returned from a very large and long banquet, with Mr. Chauncey M. Depew at the head of the table. But the trouble with his photographer has been this: too much alkali all through his manipulation; it is also possible that his bath was too weak. At any rate there is too much of the wrong thing in the right place somewhere. It is possible that he over-dosed his toning solution with soda in attempting to neutralize it. If photographers will use the rule of thumb, and never test their solutions or give them ordinary consideration, they have no right to expect good results.

One of the most prevalent diseases among printers is known as the measles. We have already alluded to one cause, but there are other causes besides what we have described. A correspondent in Wisconsin sends us a lot of afflicted prints, and wishes us to state for the good of the craft what he has dis-

covered concerning this disease. He says: "I am not one of those careless fellows who let a bath stand from week to week in a silver dish without filtering it, but I keep it in a large bottle exposed to the light when not in use, and filter every time both before and after using. So the neglect of the bath did not cause my measles. I think I have, however, discovered the cause. I have been in the habit of floating the paper from one and three-quarters to two minutes, and I think my paper had become a trifle dry or repellant, thus requiring longer floating. It may be also that there was another cause. I had blotted the paper immediately upon removing it from the bath, and left it between the blotters, face up, until the next sheet was placed on the bath, which allows just about the right time for the silver to settle in the albumen. I was led to think of this by noticing that the prints did not show through on the back after toning and fixing. Am I not right?"

Answer: Our correspondent is evidently correct as to his methods of producing weak and measly prints. The probability is that the best part of his solution went into his blotters, and from there to the silver refiner, causing him an unnecessary expense to obtain the silver, and a great loss of prints.

Another correspondent from the same State, but in a different state of trouble, sends us some prints full of black specks. His vignettes are particularly afflicted, the unhappy blemishes occurring through the face and background to a horrible degree. He declares that these nuisances appeared in the toning bath. He says: "I have been accustomed to using the same toning bath for prints, only adding gold each time to make up the desired strength. Now I find that either the cold weather, or some other cause, perhaps particles of the metallic gold held in the old bath, were the cause of the tiny specks. By looking across the print you will observe the golden lustre of the specks, which goes to prove my reasoning to be correct. Having since made a new toning bath, and no spots occurring, I feel sure I have hit the right nail on the head."

Answer: Our friend did not go wrong in using his toning bath as he has stated, but for some reason or other the gold added to his bath was not dissolved always before he began to use his solution, and, therefore, the trouble has occurred as he describes. Once knowing what it was, he appears to have been smart enough to get out of it.

A Canadian querist writes as follows:

"First: Shall we silver longer on a strong printing bath, neutral, or 'slightly alkaline,' than on a bath much weaker?

"Second: Is there any remedy for paper crawling in a printing frame in full sheets?"

Answer: First. We are unable to comprehend this question, but would suggest that our correspondent try the experiment.

Second. Large printing frames should always be supplied with a sheet of plate glass. Paper pressed against this will not crawl or corrugate.

The following question is frequently asked: "How many cabinet prints should a good printer obtain from a ream of paper? We cut sixteen to the sheet. And what is a fair amount of waste per sheet or ream? The party I am with has no art about him, but is running a picture factory, and thinks there should be no waste of any kind. He not only wants the earth, but the straps that hold it together. Our average printing is from thirty to thirty-five sheets of paper per day."

Answer: The yield of cabinets to a sheet of paper, depends largely upon the skill of the printer. If he is a careful workman, and is sufficiently well paid to guarantee the interest and success of his employer's business, the result would probably be satisfactory all around—greater, perhaps, than if he was an ordinarily skilful workman but only paid bare living wages. In the first instance, he would feel that his employer's success insured a certain amount of prosperity to him, and would enlist his sympathy and co-operation. In the latter instance the labor in return would be grudgingly given. A careful workman might save his salary in economical workmanship; his possibilities, however, are limited. He can do but a certain amount of work well. If he is forced beyond his normal capabilities, the results will be disastrous, and prevent any proper

calculation being based on a normal condition of things. An average day's work for an active, first-class man, is about thirty sheets of paper. This, if carefully silvered, will cut, with a Bergner cutter, sixteen cabinets; in such cases the average yield will be twelve perfect pictures, or 5760 per ream. If, however, the printer has an assistant who is careless, the results will by no means be so certain, and the quantity will probably be greatly diminished. Circumstances often arise which overthrow all one's calculations. Such things are unforeseen, and possibilities of an estimate should not enter into this character. There is no rule that will work every way.

E. E. B. sends a lot of landscape prints spotted dreadfully with yellow stains, and wishes to know their cause. He says: "My assistant claims that they do not come or show until after the prints are through fixing and in the wash-water. Could it be from toning too quickly? He tones his prints in about one-third of the time I would take in toning. What time should the prints be in toning to give the best results? I have a 19 x 24 common-sense tray for silvering paper, and make my silver bath by the formula on page 448 of *Quarter Century in Photography*. After using this bath a few times it becomes acid, and the paper measly. Can there be anything about the tray which causes the trouble?"

Answer: With reference to the spots on the aforesaid, they are caused by the prints not being fixed at all. The probability is, the operator is in too much of a hurry about his toning and fixing, and is a slouchy and dirty worker generally. The cause of the stains is want of fixing, and nothing else. If there is as much common sense in the head of the printer as there is in the tray, they would be good prints. We do not think the tray is at fault at all. Prints should not be toned in less than about five minutes.

A FLORIDA photographer wishes to know how to make black tones. He says: "I was encouragingly successful here until my competitor gave out that my prints and negatives, because their tones are reddish and purplish, would fade, etc. This party has a method of toning which produces jet-black tones, and I am free to confess that all my experiments and labors, and all the formulæ I have, will not produce this black tone; I am desirous of learning his secret; I want to get my tones to print black; I do not mean purple, but a jet-black; not that I myself like such dark prints, but that I may be able to do it if it is wanted. Have you a cheap handbook for new hands in the business, and what is the cost? I want a book that gives details in simple language, with methods of working, etc. My toning solution is 8 ounces of water, 1 grain of gold and sodium, 4 grains of carbonate of soda, and yet I do not get good tones. My good wife and I get worried about it at times. Can you help us to a solution we so greatly desire?"

Answer: Our correspondent is not aware, perhaps, that the gold bath is not the only agent influential upon the tone or color of the prints. The negative has much to do with the results. The probability is that his competitor makes what are known in the trade as "cast-iron" negatives. With such negatives black and white tones can be had, but with a good negative they cannot be had. If he chooses to fire this back at his competitor's patrons when they call, it may be of some use to him, and help him to be contented with his own work. His toning bath is all right, but he is wrong in wanting a cheap book on photographic processes. It will pay him to get a good one, and learn his business thoroughly.

THE HUMOR OF IT.

A BRIGHT little boy of six, was told by his amateur papa that he could not have any dessert until he had "cleaned his plate." He answered: "Well, then, papa, I shall be so over-developed I cannot eat any pudding."

THIS photographer "knows it all,"
"He needs no magazine or book,"
And when the process-sellers call,
He always buys, and *in* is "took."

A SMALLER one, of three, on praying, "God bless papa," added, "touch him up right, and if he don't print well, try him in the shade."

Another juvenile, whose father is a photographer, and whose mother "helps in the studio," seeing her tinting the face of a rather wrinkled subject, said: "Ma, you are decorating an antique, 'aint yer?"

Entirely too Confiding. *Scene:* The Glooms Police Court.

Judge Guffy.—You say you took the prisoner's photograph?

Complainant.—Yes, your honor.

Judge G.—And did not get pay in advance?

Comp.—Yes, your honor.

Judge G.—And you lent him a dollar?

Comp.—Yes, your honor.

Judge G.—And took him home to live with you?

Comp.—Yes, your honor.

Judge G.—And then he robbed you and ran away without paying you?

Comp.—Yes, your honor.

Judge G.—Well, I'll fine you, and add the costs.

Comp.—Fine *me*. What for?

Judge G.—To develop common sense in you. Next case.

Daughter.—Ma, should I ask Mr. Focus, the photographer, to *make* me a photograph or *take* me a photograph?

Mother.—Why, *make* me a photograph, of course. No one born in Boston would speak otherwise.

[*Translated for The Philadelphia Photographer.*]

INTERIOR PICTURES.

BY CARL SRNA.

Who has not noticed the charming effect produced by a tastefully arranged room? Who does not know the exalted feeling produced on entering a cathedral with its gigantic pillars and its half-gloom, causing one involuntarily to bow in reverence? Who has not stood on the ruins of a grand old structure, with broken columns and ivy-covered walls, and reflected on its past magnificence and glory?

All these impressions which the human heart receives and keeps, and which live ever in its memory, until dispelled by new and mightier feelings, awake with renewed strength on viewing a portrait which brings before our spiritual eye long-past scenes, and stirs within us the remembrance of many joyous and yet, alas, often of many grievous hours also.

If I introduce this article with such reflections as these, it is because the conviction is forced upon me that it is not quite right to neglect taking pictures of interiors, since dwelling-houses and other structures play no insignificant part in the life of a man; and how much a man would often give could he have a picture of a certain room, where a turning-point in his life took place.

Every amateur should, therefore, not neglect to take a picture of his home, for even if such a picture should have no particular interest at the moment, yet in course of time it might be valuable.

Owing to the technical perfection of our present photographic apparatus and objectives, and by the use of dry plates, it is very easy to make faultless pictures of dwelling-rooms, and full play is left to the artistic taste of everyone in this respect.

For taking pictures of interiors, ordinary objectives with very limited picture-angle cannot be well used, but rather short-sighted objectives with very short focal distances and very large picture-angle, the so-called wide-angled objective.

There are differently constructed objectives of this kind, of which Ross's rapid symmetrical objective, Dallmeyer's wide-angle rectilinear objective, and that of Francais's, also Steinheil's, wide-angled aplanat, and Voigtländer's wide-angled Euryscope, are most to be recommended. These named objectives possess a picture-angle of over ninety degrees, and produce a perfectly correct picture, without any distortion.

Before proceeding definitely to the taking of the interior, the lighting of the same must be arranged as favorably as possible. Since the windows of the room generally serve as the only source of light, and through these a great deal of light comes in, so that the parts of the room nearest the windows appear intense while the inner parts are too dark, an exposure of the developed plate under such light-proportions would, in the

strongly lighted parts, show solarization, and in the darker portions there would not be enough details shown.

Now, to avoid too great a contrast of light, and to obtain, as far as possible, a uniform lighting of the interior, it is necessary to use curtains to soften the bright light from the window; or, better still, colored tissue-paper.

In dwellings which, as is generally the case at the present day, show a tasteful arrangement of various colors, besides tapestries, oil-paintings, water-colors, bouquets, etc., only the orthochromatic process should be used as regards the proper production of the values of the colors. In views of picture-galleries, also of churches with colored-glass windows, and most re-darkened portraits of old masters, this is absolutely required.

Now, since the lighting must be guarded against too much contrast, as I said before, I have used with good effect yellow and, indeed, even oiled-silk paper, for softening the bright window light.

The yellow light which comes through this yellow tissue-paper being dispersed through the whole room, makes it possible to dispense with the yellow disk with the orthochromatic plates, and permits, moreover, of the brightening up of the too dark parts by placing petroleum lamps as favorably as possible, concealing them by the use of folding screens or other furniture; and these lamps, conforming to the other lighting, brighten up the darker parts with yellow light also. In this way I obtained, with the erythrosin-bath process of Mallmann and Scolik, the finest results.

It is self-evident that in taking pictures of large rooms with high windows — as churches, etc., where it is not easy to cover the window-panes with yellow tissue-paper —the yellow disk must again be brought into use.

Another important point, in order to obtain beautiful effects, is to be careful, in taking pictures of interiors, that the sun's rays do not fall directly into the inside of the room, but only touch the windows.

When it is possible, I generally take dwellings with evenly but lightly clouded sky; and by this means, even if the exposure is decidedly prolonged, I avoid too sharp a contrast of light.

And now to come to the taking itself. It is a matter of strict necessity that the camera should be perfectly horizontal, so as to avoid markings and distortions; and, when possible, it should be set up at least to the height of one-third of the room to be photographed; and in choosing the point of view, care should be taken to have the objective out of the reach of the light coming in through the window, and that the principal object to be taken should not be placed exactly in the middle of the picture, as this would destroy the symmetry of the picture and make it ugly and not picturesque.

The horizontal position of the camera should be tried with the spirit-level to find out if the ground-glass and lens-board are just parallel to each other, and that both stand perpendicular to the bed of the camera.

Concerning the focussing of the picture. This is often very difficult to do, even when the full opening of the lens is used, owing to weak light in the room, which prevents all but a trace of the picture being visible on the ground-glass.

In this case it can be done by the aid of a burning candle. To make this effective, some one should hold the candle as high as the objective, and move it slowly along the side of the wall in front of the camera until its flame can be seen on one of the sides of the ground-glass; now it can be known exactly from which point of this one side the picture of the interior appears upon the ground-glass. Then the other side of the picture must be obtained in the same way, and then the floor and ceiling, and then everything that must appear upon the plate is ascertained.

For the definite focus the candle should be held midway from the objective to the background, and also midway between floor and ceiling, then the flame of the candle is held full on the room, and then extinguished. In this way a thoroughly *sharp* picture is obtained.

The time of exposure should be reckoned according to the darkest parts of the room to be taken, and generally very plentifully. An overexposed plate can be corrected in the development, but a too-little exposed

plate cannot, as a rule, be changed, owing to the great contrast between light and shade.

In general, pictures of interiors suffer from the fault of a too-short exposure of the less-lighted parts.

In this place I will speak of an entirely wrong idea held by many amateurs, having had opportunity to notice it again this very day. Many amateurs are of the opinion that underexposed negatives can be strengthened —but this is quite erroneous. Only those negatives can be strengthened which show all the details in the shades, and which have not reached the required strength owing to too-short development, as is often the case with overexposed plates.

If one wishes to strengthen a plate not sufficiently exposed, he only makes the glaring contrast between light and shade more apparent, the high-lights being much too dense, without causing the deep shadows to have any more details whatever.

Concerning the plates to be used, it is not of advantage to use highly sensitive plates; it is safer to work with less sensitive ones, and for interior pictures an iodo-bromide emulsion is preferable to the pure bromide-silver plates, since one is less liable with the former to the danger of solarization in intensely lighted parts.

In choosing a station from which to take a picture of a room care should be taken that the openings of the window curtains do not come upon the picture, because they would be quite opaque in the negative, and often spread themselves over the limits of the deep shadows, like the halo around the moon, and this proceeds from the reflection on the back of the negative glass. Interior pictures do not show this evil on negative paper, consequently Mr. Valentine Blanchard gives, in PHILADELPHIA PHOTOGRAPHER, this advice: To avoid this reflection rub the backs of the emulsion plates (using the finger or brush) with, as far as possible, non-actinic color, or common or burnt sienna; this is then rubbed in dry upon the glass side of the plate; that this must be removed before development is self-evident.

The development of interior pictures must be done with pyro developer, and it is advisable to use this in very diluted condition, because it is ordinarily necessary to develop long, so as to bring out the details of the shadows and half-tones. The iron developer is absolutely not to be used.

The ordinary soda developer, according to Professor Eder's recipe, is to be recommended.

Solution I.

Sulphite of Soda, crystallized	100 gr.
Distilled Water . . .	500 "
Pyrogallol	14 "
Sulphuric Acid . .	5 to 10 drops.

Solution II.

Crystallized Carbonate of Soda, chemically pure . .	50 gr.
Distilled Water . . .	500 "

The sulphite of soda is dissolved in cold distilled water by shaking, and then the pyrogallic acid is added.

For the use of interior pictures a volume of Solution I. (pyro solution) is mixed with a volume of Solution II. (soda solution), and three to four volumes of distilled water. While in the normal soda developer equal parts of Solutions I. and II. and distilled water are used; in development of interior pictures this is diluted, three to four parts of water being used.

The negatives appear very distinct by the use of this very diluted developer, and are well worked through in all parts.

After development the plate must be washed off well, and laid for a minute or two in a bath of concentrated alum, which takes away the yellow color of the plate. Then it is washed again, and then fixed.

If, in spite of all care, some light from the windows has come on the picture, then Prof. Vogel's method of partial weakening of too-thick spots in gelatine negatives can be used.

For this purpose the dry negative is dipped in water long enough to be well wet through; then the parts which are not to be weakened are dried with blotting paper and upon the parts to be weakened, a mixture of 100 c.cm. (1 : 10) fixing soda, and 5 c.cm. (1 : 5) red blood alkali solution is put on with a brush. The negative must be held horizontal during this procedure, and by

holding a looking-glass underneath the progress of the weakening to the desired degree can be observed. This happens after a few minutes, and then there remains only half an hour's washing of the plate with water.

A further means of obtaining a serviceable copy of strong negatives, rich in contrast, is to cover the cliché upon the glass side with Pan's (puffed) paper, leaving free only the parts that are too dense, or, instead of tissue paper, diluted varnish could be used, in which case the process of retouching on the back of the negative furnishes no difficulties whatever.

Finally, I will make mention of still another new process for photographing interiors, portraits, and groups, and that is by magnesium light.—*Photo. Rundschau.*

(Republished by general request.)

BOOK NOTICE.

AROUND THE WORLD ON A BICYCLE. By THOMAS STEVENS. New York: Charles Scribner's Sons, Publishers. Vol. I., from San Francisco to Teheran. Vol. II., from Teheran to Yokohama. $4.00 per volume.

THESE two splendid volumes give the record of three years of hard work by a bright, modest, pushing young man, who feeling that he had a mission in life, and plenty of reserve power to carry it out, undertook the work, persisting in it to the end. Many of our readers are familiar with his results from the contributions which have appeared from his pen in the *Outing* magazine.

The itinerary includes the journey from California across the continent to Boston; then the Atlantic is crossed, and the continental journey begun at England, continuing through France, Germany, Austria, Hungary to Servia, Bulgaria, Turkey, and from Armenia to Persia.

So much for volume I. Volume II. includes the journey from Teheran, in Persia, to Afghanistan, India, China, and Japan. The distance actually wheeled was about thirteen thousand five hundred miles. The journey, as we have said, was a most remarkable one, and involved experiences with all kinds of people, that are as interesting as the adventures of Robinson Crusoe. The great central point of interest which permeates every page is the reception given to the bicycle. Most of the people through whose country Mr. Stevens wheeled had seen the howadji, or white man, but in most cases the bicycle was a new sensation—a new departure, to speak literally. It must have been a constant source of interest to the distinguished author himself to speculate upon how he would be received when entering any new country. Sometimes he was looked upon as an escaped lunatic on a pilgrimage to some Mecca of his faith, and so was allowed to pass through the line; while at other times the people were quite sure he was an enemy of all that was good and right and loyal, and placed every obstacle and trouble in his way. At one time his whole caravan was taken back at a point 300 miles from India, and he was compelled to make a 6000-mile circle in order to get back to his objective point which he had so nearly reached; again he was chased in China by the natives, and on several occasions most brutally and inhumanly treated. In Japan he found a great difference of treatment, while China ignored him and looked upon him as a fakir. He spent the winter in Teheran; he rode with the Shah of Persia, and was offered the command of a corps in his army. Mr. Stevens has informed us two or three times that it was always a matter of regret to him that when he undertook his journey photography was in such a weighty mood that he could not employ the advantages of the camera. Had our art reached its present Kodak condition, how much more numerous would the illustrations have been, and how much more life-like in this great work than they are. As it is, they are mostly engraved from original sketches made by Mr. Stevens on the way. They number some 250 in all, and are exceedingly graphic. We can personally testify to the correctness and spirited faithfulness of many of them among the orientals. Mr. S. however, did not go entirely clipped of photographic help. At one time he was put to it to know how to amuse and entertain and divert, while he contrived his escape from, a troublesome audience of ad-

mirers and beggars. While he was seated among them, accepting their rather disagreeable and profuse hospitality, he says: "I showed them, among other things, a cabinet photograph of myself, in all the glory of a needle-pointed mustache and dress-parade apparel. After a critical examination and a brief conversation among themselves, they pronounced me an 'English Pasha.' I then handed the sheikh a set of sketches, but they are not sufficiently civilized to appreciate them; they hold them upside down and sideways, not being able to make anything out of them; the sheikh holds them in his hands, and looks quite embarrassed, like a person in possession of something he does not know what to do with. Noticing that the women are regarding these proceedings with much interest from behind a low partition, and not having yet become reconciled to the Mohammedan idea of women being habitually ignored and overlooked, I ventured upon taking the photograph to them; they seemed much confused at finding themselves the object of direct attention, and they appear several degrees wilder than the men, so far as comprehending such a product of civilization as a photograph is an indication. It requires more material objects than sketches and photographs to meet the appreciation of these semi-civilized children of the desert." This is a true picture of oriental character.

The children of the desert have not yet learned how to appreciate photography; the camera is looked upon as a magical implement meaning no good. How the bicycle must have appeared to them, flashing through their country like an Arab lance, we can well understand.

Mr. Stevens' ride, however, was not all pleasure and easy going. He met with obstacles, not only from the populace, but on the way was frequently deterred by tumbling cascades, rough ravines, snowy and slippery going, and here and there by accidents such as occur to all experienced travellers.

One time, coming down a steep incline in Bulgaria, he was dismayed by seeing the Bulgarian mail tied to mules' backs, arranged across the road obstructing the passage. His fear of either interfering with the public mail or killing some of its carriers, is easier understood than described; but Mr. Stevens, in his usual graphic style, makes it all plain. Here is a little bit of experience, from page 359, which gives one an insight into the necessity for pluck and philosophy which comes upon the oriental traveller, be he on bicycle or camel:

"A two hours' road experience among the constantly varying slopes of rolling hills, and then comes a fertile valley, abounding in villages, wheat fields, orchards, and melon gardens. These days I find it incumbent on me to turn washerwoman occasionally, and, halting at the first little stream in this valley, I take upon myself the onerous duties of Wah Lung in Sacramento City, having for an interested and interesting audience two evil-looking kleptomaniacs, buffalo-herders, dressed in next to nothing, who eye my garments drying on the bushes with lingering covetousness. It is scarcely necessary to add, that I watch them quite as interestedly myself; for while I pity the scantiness of their wardrobe, I have nothing that I could possibly spare among mine. A network of irrigating ditches, many of them overflowed, render this valley difficult to traverse with a bicycle, and I reach a large village about noon, myself and wheel plastered with mud, after traversing a section where the normal condition is three inches of dust."

The work is printed on splendid plate-paper, and bound in cloth, gilt. It will be found most entertaining to every child from the age of five to one hundred and five. Besides being the narrative of an enthusiastic traveller, it conveys information about people and places which has not appeared in any book of travel or guide-book—all is told with a freshness and feeling that is infectious from beginning to end.

THE POSITIVE PRINTING PROCESS UPON ALBUMEN PAPER.

BY DR. E. A. JUST.

(Continued from page 620.)

Production of Gold and Silver Salts for Photographic Purposes.

Nitrate of Silver.—Whether it is the very low price for which nitrate of silver can be

bought, or some other reason, it happens that few men prepare their own silver salts.

Like weights of the silver to be dissolved, and of raw, moderately concentrated nitric acid of 1.3 specific gravity, and the latter poured into a porcelain dish. If one only has acid of 1.2 specific gravity on hand, he can take one and one-half times the quantity. Into this acid is dropped the clippings, or fine-grained silver, little by little. If gas development does not occur at the same time, then it can be warmed until it does, and then the dish removed from the fire. To guard against loss by spattering, a glass funnel may be fixed over the top, so that its edge does not touch the fluid. The heating should always be done in a sand-bath ; this is a large iron dish filled with dry sand in which a porcelain dish fits evenly. The sand-bath can be placed directly over the fire. Of course, the whole operation must take place where the unhealthy exhalation of gases can find exit. If all the silver has yielded, and the gas development remains, warm it again, and, finally, when the gas development has entirely ceased, it should be heated further, to remove the surplus nitric acid, and heating continued long enough to form crystals on the surface and on the edge. The dish is now allowed to cool gradually, and to stand quiet for the crystallization. The longer the silver solution stands and is allowed to cool, the purer and larger are the crystals. When the solution is quite cool, and the crystallization ended, then the mother liquor is carefully poured off, the crystals allowed to dry in a place perfectly free from dust, and then the latter can be used in making up the silver bath with ordinary neutralization with carbonate of soda. If the silver used was really pure, then the mother liquor can once more be heated and brought for crystallization. Should the silver contain foreign ingredients, then these, especially copper, will be found mostly in the mother liquor. In this case this should be heated to drying, and heating continued until the dry residue begins to melt. The admixture of copper salt is decomposed sooner than the silver salt, and separates as black copper oxide. If by dissolving a sample in water, and treating with excess of ammonia, no more blue coloring comes, then the whole melted mass may be dissolved in water and filtered. The filtered mass is again heated, with some nitric acid added, and left to dry, so as to convert into nitrate. Should there be a part of the silver left undissolved, then these pieces of silver should be removed from the crystals and kept for the next reduction. Some residue can be removed from the silver bath by filtering. If one wishes to obtain melted silver salt, he must pour off the silver solution before the crystallizing point, from the undissolved remaining pieces, and heat the clear solution until the mass is dry and begins to fuse. Thus it is customary, in too severe heating, to reduce a small part of the silver salt, so that the separated silver colors the melted mass gray. In order to bring the silver again into solution, a few drops of nitric acid are added. This addition effects at the same time the transformation of any nitric salt of silver present into a nitrous salt.

In the melting, it is necessary to take care that no combustible materials, as wood, coal, or the like, fall into the melting silver salt, as explosion and reduction would occur. The melted silver nitrate must be pure white, and must possess ray-like crystalline fracture. A blackish color can arise from reduced silver or from copper oxide, greenish from nitrate of copper. The mixed silver and copper oxides separate in solution in water. If a copper salt is present, then the solution of the nitrate by the addition of ammonia in excess will color blue. If nitrate of lead is present, the addition of sulphuric acid will produce a white precipitate of sulphate of lead, which will not dissolve in further addition of water. Sulphate of silver which can come down from a concentrated solution, is soluble in water. For alkalies, there should be an examination by dissolving in water, precipitating with muriatic acid in excess, filtering of the chloride of silver, and heating the filtered matter to dryness. Should nitrate alkalies be present, the filtered material will show a sediment.

Production of Chloride of Gold and Chloride of Gold with Alkalies. — Only pure granulated gold should be used. The gold grains are put into a porcelain dish, covered over with aqua regia, consisting of four to six

parts concentrated muriatic acid and one part concentrated nitric acid, and moderately heated. Here also a sand-bath must be used for safety, and a place chosen where the poisonous gases can find exit. The solution must proceed gradually. When completed, the solution must be slowly heated to dryness, best in a water bath. The surplus acids escape in great part. Then it is dissolved again in distilled water, the chloride of silver present filtered off, and again dried in the water bath. Finally, the solution gets darker, and stiffens in the cooling to a red, leafy, crystalline mass, consisting of neutral gold chloride. The salt can never be obtained perfectly free from acid, because in stronger heat, which would be necessary to remove the acids, the chloride would decompose at the same time, partly into sub-chloride and free chlorine. The sub-chloride, however, does not dissolve in water, but is gradually decomposed to chloride and metallic gold. If one wishes to buy residue, and is content with a less complete grain, then a very good neutral gold chloride can be obtained. The gold chloride should be heated up to partial decomposition, dissolved again, the deposited metallic gold filtered from it, and the clear gold chloride solution carefully evaporated. The metallic gold is then again dissolved in the next production. To produce the chlorides of gold and alkalies, which have the advantage of keeping in the air, the gold chloride, heated to dryness, is mixed with 30 per cent. common salt, or 38 per cent. chloride of potash (relative to the gold used) dissolved in water, and evaporated in gentle heat to the formation of crystals.

TRE END.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 610.)

Interiors.

When the summer work is done, autumn come and gone, and nature puts on her sombre garb and prepares for the needed sleep and rest mercifully vouchsafed to her, the amateur need not think that necessarily he must pack up his kit, lock up his dark-room, and rest also. There is work for him still to do. Now he will have time to study and carefully digest what he reads, to observe the mistakes that he has made, and discover how and why he made them. But, as much study is said to make Jack a dull boy (doubtful), he can, when the ground is covered with snow, or the trees glittering in the sun covered with icy coats, take some of these; but he will probably soon tire of them. Then let him turn his attention to the making of transparencies, lantern slides, and especially to interiors. As I fully believe that development is an art, and that, like music, it requires plenty of intelligent practice, he will, with this work, be able fully to keep his hand in, and will find, when spring comes, that he is better prepared for outdoor work than he was when he left off. Unattractive, indeed, must be the home that has not at least one room that will make an attractive photograph. When properly lighted and arranged, even an ordinary room acquires a certain amount of dignity in a photograph. And then when we think of the many recollections these photographs will bring back to one in after years, of former homes, the pleasant rooms, small though they may be, each telling its own story of the many happy hours there spent, and, perchance, people them with the forms of dear ones who have laid down life's labors and are at rest, what surges of most sacred memories will flow over our inmost souls as we gaze upon these mementos of the past, and we will thank the beautiful art that has preserved them for us.

The first requisite is a good, perfectly rectilinear, wide-angle lens, and of as short focus as will perfectly cover the plate. The forward-movement camera in focussing is extremely convenient, for you will often be required to hug the wall or corner to get a good field. In order to avoid markings and distortions, it is strictly necessary that the camera should be perfectly horizontal, and should be set up, when possible, to the length of one-third of the room to be taken. Avoid having the principal object in the room in the middle of the picture, for this would destroy its symmetry and give you a

picture that would look ugly. Do not depend upon your eye in testing the horizontal position of the camera, but use a pocket spirit-level, and see to it that the back and front board are true to each other. Owing to the poverty of light in many rooms, it is oftentimes very difficult, even with the full aperture of the lens, to have the image well portrayed upon the ground-glass. To obviate this difficulty, you will have to call in to your assistance the aid of a lighted candle. The candle should be held by some one on a level with the lens, and moved slowly along the side of the room in front of the camera; by this means you will have one side of the picture. The second side must be obtained in the same way; then the floor and the ceiling; and, lastly, everything that must appear in the picture must be illuminated by the aid of the candle, and its position ascertained. It is well to have the candle held midway between the lens and the background or wall, and also midway between the floor and the ceiling. By carefully following out this plan a very sharp image is focussed, and, if properly exposed and developed, the result will be very satisfactory to all concerned. Use as quick a plate as you can obtain, for with the room well lighted and a small diaphragm, rendered necessary to secure the greatest amount of detail possible, I think that the length of exposure required will be long enough to tax any one's patience. Improper lighting and underexposure are probably the chief causes of most failures. Expose for the shadows, the lights can take care of themselves. Remember that no direct sunlight must be admitted into the room, but as much diffused light as possible, and the more the better. The light should come from the rear and sides. If, unfortunately, a window presents in front of the lens, it must be closed carefully with the shutters, and a curtain drawn over it; if you omit this, halation is sure to be produced. Should the sun shine through the rear or side windows, turn it into diffused light by drawing the shades over them, if white; if not, pin up a white sheet or table-cloth; paper even answers well, and is frequently used. But it may be that you wish to photograph the interior of, say, a church. How are you going to get rid of this halation, when all the sidings and boundaries of the windows will be blotted out by this halation, as it is called, by which, like the halo around the moon, the strong light is spread beyond its natural boundary, and gradually diminishes and fades away into the shadow in its immediate vicinity, blotting out, as it proceeds, any detail in its way; you will have to remedy this serious defect by getting rid of the reflecting power of the back of the negative. Some advise painting the back of the plate with some non-actinic color, like raw sienna, others by placing black paper behind the plate, and even thin red rubber-sheeting has been recommended; all and each of them have objectionable points. The paint has to be removed before development, and the paper lying loosely behind the plate will not prevent all the halation from showing itself, and the rubber will not always stick. But if you will bring the black or deep-blue needle-paper into a state of nearly optical contact with the aid of glycerine, I think that all danger of halation will be avoided. An over-cast day, not too dark, will be found to be the best for photographing interiors, for then you will have a soft even light over the entire room, and, by the proper arrangement and careful development of the negative, a successful and artistic interior will be the result of your labors.

If you have been compelled to block out, as it were, a window, just as you are about finishing the exposure, cap your lens, draw back the curtains, and throw open the window shutters, remove the small diaphragm and insert a larger one, and expose for a moment on the room once more; the landscape that presents through the window will then appear with a great deal of naturalness upon your negative. Always aim towards overexposure in taking interiors, for, as you have been told before, you can control them better and obtain better results than in attempting afterwards to strengthen an underexposed plate. It is desirable also to develop slowly in this class of work, and you may frequently be called upon to weaken the pyro at least one-half, and be glad that you did it, too, for it is of the greatest importance to bring out every

half-tone down to the deepest shadow, and at the same time not to build up too much density in the high-lights.

The appearance of one or more figures in an interior certainly adds very much to the picture, and gives it more of a home-like look. The ladies particularly desire to have photographs of themselves, surrounded by their *lares et penates*, in their favorite rooms. But, unfortunately, until lately, the length of time required for an exposure, and the difficulty of keeping still, which unfortunately is too common a fault with most sitters, rendered this portion of interior work not as successful as could be desired. But by the aid of the magnesium flash-light all these difficulties are overcome, and many a pretty group of a family circle gathered around a centre table, engaged in their usual duties or pleasures, or scattered about the room in easy attitudes, attest the wonderful powers of this new and simple application of magnesium. It is no longer a work trying the patience of both the operator and the subject, nor does he now place his plate in the developing tray fearing failure from underexposure. It is well to arrange the room during daylight, placing the reflecting screens in their proper position for the best effects. Determine where to seat your figures for the most striking results, and focus your camera sharp, so that everything will be ready when the time comes for the exposure.

(To be continued.)

RAINY DAYS.*

BY CHARLES BUTTERWORTH,
Wilmington, Ohio.

SOMETIMES rainy days are like misfortunes —they come not singly. In fact, sometimes so many in a group as to grow monotonous, unless you have a great deal of retouching to do, and a great many negatives to number, register, and put away. Even this is accomplished at last, and still it rains, or is, at least, dark and dismal, which will be sure to depress the spirits of any ambitious photographer, unless he can find something that will profitably occupy his attention until the clouds roll by.

To play cards or chess with the boys in the printing-room may do for the hour, but is certainly not profitable, and leads surely to habits of idleness.

If a young man wants to succeed in life, he must choose a profession or trade in line with his natural inclinations, and to succeed best, his recreation and diversion should be along the same line. His everday work may be the skimmed milk of his life, but his recreation should be the cream.

If he is a natural mechanic and has chosen the trade of a carpenter, his rainy days should be spent in making fine carved panel doors or furniture—something on a higher grade than his rip-saw everyday work. If he is a journalist, his rainy days should be spent at something, either prose or verse, into which he might throw more study and more feeling than into his simple record that the day is done. A man should be an enthusiast in any trade or profession if he would tower, like Saul, head and shoulders above his fellows. The world has accounted insane such men as have made the greatest discoveries in scientific research. Says Seneca, "There is no great genius free from some tincture of madness." By this I would impress upon you that if you have chosen the profession of photography, you will best succeed if you let others "run the government" while you devote your whole time to the work before you, even at the risk of being called a "crank."

When the rainy days come and the work stands at a dead lock, instead of playing cards, or fuming through the gallery making everyone miserable, as well as yourself, if you will take up your copy of *Burnet* and study it systematically, you will soon find yourself intensely interested, the time will pass before you are aware of it, and all the while the foundation of the knowledge, on which you are to build your future reputation, will be broadened out and strengthened.

Continued success is never built upon ignorance, nor knowledge upon idleness. Burnet says of the student, "Without having accustomed himself to a proper mode of arranging his observations, his

* Written for Photographic Mosaics, 1889, but received too late.

life will be spent in an endless search after that which is continually passing before his eyes."

The rainy days will be just the time for this study. Your gallery should have a room apart that might be used as a study, or studio, where you can keep charcoal, crayons, paper, canvas, academy boards, water-colors, modelling tools and clay, to practise with on rainy days. If you have the proper enthusiasm and the natural inclination, there is no question but that you can learn very much here that will show to advantage in your everyday work. Begin with pencil or charcoal by copying some simple outline drawings and then some shaded drawings, until you learn something of the manner and gain something of the confidence with which they are treated; remembering all the while to work for general effect rather than for detail, and expecting to destroy nine out of every ten copies. Very soon take up simple still-life studies, drawing from the objects themselves. For ideas about their best arrangement, consult Burnet again, for the principles of composition and light and shade are the same for these as for more ambitious works. At last you can take up that which is, perhaps, of most importance to the photographer—the human figure. This you should draw from the life, doth draped and nude. Draw it as a child would draw a map; that you may *know* "The Man Wonderful in the House Beautiful."

There is no reason why you should not learn to finish your own India-ink pictures, bromide portraits, and crayons, besides decorating your walls with your own water-color and oil sketches, or with casts from your own clay models. Try your hand at painting some simple design as a background. The material will not cost much, and if it were raining the day would be lost anyway. I have some of my own painting—to be sure, they are not as good as Seavey's—but I have used them sometimes very effectively.

Photography is efficient, but not always sufficient, and by spending this time in the study of art and in the practice of drawing and painting, you may some day be independent of the camera, if need be, while the pleasure you derive from such work may be so great that you will come to look forward with eagerness to the coming of the rainy days.

REGULATE YOUR INTENSITY.*

BY FRANK ROBBINS,
Bradford, Pa.

When lifting a negative from the fixing-bath, we see it by daylight for the first time; and often discover at this moment that we have pushed the development a trifle too far, making our negative a trifle too crisp and hard, clogging up the detail of a bit of white drapery that should have made a choice bit in our negative. This is especially so in large family groups where the bronzed and wrinkled face of grandpa appears in violent contrast with the delicate faces of the third generation. We cannot harmonize this wide contrast by our most skilful arrangement of lighting, nor can we dodge the matter in development. The younger members of the group have developed far too much intensity by the time those bronzed faces have been coaxed out with doses of stronger developer.

Now the negative is fixed. Let us regulate and equalize the intensity while it is yet dripping with hypo. Have always at hand a quart bottle of water with one ounce ferricyanide of potassium (better known among druggists as red prussiate of potash) dissolved therein; with a tuft of absorbent cotton go rapidly over those parts of the negative that are too intense, touching every white fold and bit of white drapery. Work quickly and carefully.

Now hold up the negative and examine the indensity (or rather the degree of reduction), and promptly rinse those parts that are sufficiently reduced.

If this solution works too rapidly, dilute it with water, equal parts. Try it for the first time on a negative you can afford to lose, and when you once become acquainted with its action you will never be without it. How seldom do we make a negative that we consider thoroughly good. A little too

* Written for Photographic Mosaics, 1889, but received too late.

much intensity here and there has rendered the whole effect a trifle too hard.

A dexterous use of the above reducer will correct this, or the entire negative can be evenly reduced. By flooding in a pan, if the hypo has been washed out of the film, or if the negative has been dried, dissolve one ounce hypo in one quart water, and into a portion of this pour enough of the ferricyanide solution until of a light green color, and apply same as before.

If any yellow color is left in the negative, wash thoroughly and apply a very weak solution of nitric acid (one-quarter ounce in a pint of water), and you will have a negative that will not have to be dodged in printing to give you the result you would like to see. Do not depend on the above for a cure for harsh lighting or careless development, for it is only intended as a friend in need.

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

For Professionals and Amateurs.

BY THOS. PRAY, JR.
Boston.

(Continued from page 627.)

As proof that men who are in daily work are investigating, while working, I am glad to be able to quote from an Australian, who has not only been reading the Philadelphia Photographer, but has been profiting by what he has read, by putting his collected ideas into actual practice. His letter would have had earlier attention, but for a difficulty in procuring the plates he desired, as the writer sent to England for them, and then had to wait for a time when laboratory work could be laid aside for the field, and a three days' "camp tramp" upon the "Bear Island," one of the prettiest spots of rocky ground in that beautiful and immense Lake Winnepesaukee, New Hampshire. There for three beautiful September days I hid from all business connections, telegraph, or other nuisances, and enjoyed to the superlative the company of some personal friends, quiet nights, where sleep and rest came at twilight, and were unbroken until sunrise, and blisters were as hardy as possible, by pulling a boat, and where the beauty and grandeur of the scenery were duly made in a permanent form by our travelling companion—our tramp camera; but I had almost forgotten our Australian friend. He says:

. . . "Your article in this year's *Mosaics* on the subject of 'Development and Exposure,' I have perused with much interest; strange to say, the developer practised in my establishment is within a near approach to the one recommended by you. . . . I have thought fit to ask you one or two questions in connection with the hackneyed subject of scientific development, since, to my thinking, it is the one part of photography that few photographers pay the attention to that the subject warrants.

"Well, now, you have oftentimes counselled that people were using far too much bromide nowadays; this may be partly true, but I hold it to be an axiom that the best results are not to be obtained by exact exposure, or, more properly put, what is considered proper or correct exposure. I am speaking here of studio work. I find in my practice it is better to expose a little over; say, if two seconds were correct, give three seconds, and hold in with a few drops of bromide. I know you have thrashed out the question of development in a way few men have, and any difference of opinion I would prefer against yours, I do so with all humility. For instance, I would like you to try a dozen of 'Ilford's cabinet plates,' the *extra-rapid* series, and develop them in the way I recommend. I always use eight-ounce solution when development is going on, and in our dark-room time is not considered an object where first-class negatives are the end in view. . . . What I claim for my system of development is great uniformity in the day's work, scarcely ever losing a negative through over- or under-exposure; in winter it takes us nearly forty-five minutes to develop a batch, on account of the temperature, but we prefer to keep to the slow development than rush the negatives up with either ammonia or soda. I might say we use fresh sulphite of soda and pyro every day, rather throwing out the solution left over than using it. I now

give you the formula I am using, and you will see it is almost a copy of yours.

"A.

"Schering's Pyro (1 drachm)	60 grains.
Schering's Sulphite of Soda	1½ ounces.
Water	20 "

"B. Bromide solution:

"Water	1 ounce.
Bromide of Soda . .	100 grains.

"C. Soda solution. (Not given.)

"To develop, 8 ounces of solution is used, and three negatives developed at one time, and the modulations are produced according to the subject's dress and contrast required, by use of three or four drops of bromide solution B, as the dress may be light or dark, or with deep contrasts, or temperature of solutions vary; but if the negatives show signs of underexposure a few drops of a solution of

"Carbonate of Soda . .	1½ ounces.
Water	10 "

is added." . . .

The writer of this letter is a most interesting one to read after, for he has made many a long watch for the change of the latent into a visible image, and has, without doubt, profited much thereby. The omission of developer, or pyro solution and carbonate of soda solution, as mixed, is evidently an oversight. The plate referred to is one of the finest we have ever developed. The sensitometer gives it 20–21 plus. Using about 3½ grains of pyro to the ounce of developer, and about 4½ to 5 grains of carbonate of soda, it yields a clear, fine-grained, creamy, or yellowish color, perhaps slightly inclining to sepia, and most exquisite "high lights" and "half tones." The prints come up nearer like the old J. C. B. Carbutt plate, or Stanley's old 20–21, and the contrasts in high lights and deep shadows are simply perfect; the exposure under the same light is slightly in excess of Carbutt's blue label, called 26-27— or Stanley 25+. If Ilford's ex-rapid are rushed in development, or a very trifling amount of soda in excess is used, they come flat, or blue, differing from most American plates in the last respect. This trait may come of the plate more than developer, as compared with other plates, but the writer from whom we have quoted has evidently taken much pains to get at the strength of both factors of the combined developer, in order to get at the finest result in modulation for a portrait negative. Here comes a decided difference: the negative from one of our Ilford plates, under a large Dallmeyer lens in a studio here in Boston, developed in seven minutes, gave far finer prints than the same, on two of our American plates, same exposure, and a slightly hurried development. The Ilford plate is most excellent where the light is quite diffused, and the lines and shadows come out with the *finest* definition and detail. Exposed to the sunshine and strong contrasts, to outside lights, and used with a slightly stronger developer, the time of development to correct density is somewhat shorter than above, and more full, round, plucky plates, or prints, never were seen; and in either case they were clean, crisp, brilliant, and the half-tones were not muddy or semi-opaque, but the transition from brightest lights to deepest shadows was so modulated that no line can be found where any difference beyond legitimate shadow or lighting, no abruptness is perceptible, and the prints are most exquisite in all that can be sought for. One thing more. The makers of the Ilford plates have evidently profited by experience, for on the Ilford ex-rapids a notice is pasted strongly urging all who use the plates to *avoid the contamination of the hypo bath by alum or acids* when using the Ilford plates, in which I can join hands, with the best of reasons, from sad and expensive experience. The plates I used in August, developing, washing in running water, putting in alum bath for one-quarter to one-half minute, and then washing for a minute; then to hypo, 1 to 5 of water, until thoroughly cleared, then another alum bath for ten to thirty minutes, wash one hour, dry, and varnish.

This plate, the Ilford ex-rapid, by using a developer of same relative proportions, but 25 to 50 per cent. stronger, or slightly higher in pyro proportionately, gives quite a slaty-blue color to the negative, and not nearly so clear a negative from which to print. Nor is the negative from over-quick or overstrong development so clear,

clean, or quick a printer; nor so round, robust, or so much like a relief, when viewed from the print; hence the results sought for *are not*, as a rule, obtained or obtainable; and here comes a point upon which I am afraid both the professional and amateur place quite too little importance, viz., the same developer will not develop any two makes or speeds of plates, and give best results in all points. In my own experience, the developer must fit the exposure, or *vice versa*, and the slight difference of pyro or soda, in proportion, makes a most marked difference in results of the final print, the point for which we are aiming, with just this distinction. In a portrait we want softness—clear, crisp plates, and all detail possible; in views we want just the same value, but a *little* more contrast, without the difference so often running into harshness; and here many people make mistakes. The supposition from some source seems to be, that almost any sort of development answers for a view, while a portrait needs brains; of the two, I prefer, for my own comfort, to develop portraits, by using plenty of time; to bring out all we can get from a view, is quite a piece of manipulation, and requires more skill than the portrait, and the portrait more chemical knowledge; and the more of artistic feeling put into either, the more gratifying the results.

The fact still remains, that we are yet quite too ignorant of the exact reason why we do not, and cannot, produce some relative regularity of results, by use of the same strength of certain chemicals in solution, upon the so-called same sensitiveness of emulsion; and if we admit, for the sake of argument, or the saving of words, that the *size* of stop has little influence upon the latent image, we do, in fact, then admit, that science has done us no good, and we discard the most essential point of the optical-chemical production that is known as a negative. And this fact is mentioned here only to call attention to what is to follow, viz., that the photographer who proposes to be in sight of the head of the profession, must know something more of chemistry than how to weigh and mix, and more of optics, than to guess at a certain-sized hole as sufficient to do the business; and the man who studies, watches results, and uses up considerable amount of brains and bromide, or other combination, will soon find that if there are places on this earth where the price of success is the price of eternal vigilance, or continual watching is needed, the place is with the operator, developer, and printer of photographic productions, where nitrate of silver is an important factor; and whether it is in emulsion on glass, or on albumenized surface on paper, the *price* of success is exactly the same.

Our Australian friend has made some good points; he is correct in the slightly plus exposure, entirely right in his slow and patient development for effects, and sound on the color of his negatives. If he had here sent a few unmounted prints from some negatives under different conditions, it would have been interesting; and if other operators and developers would pay some time to the same points, they would profit by the record in the PHILADELPHIA PHOTOGRAPHER, and make life less a burden to some other patient fellow, who plods along, wishing for help, but *never* putting in his oar to tell what he don't know; or writing a few lines (to help some other fellow who states his trouble) to tell of snags he has struck and how he got over them. There are many men in the ranks of operators who *could* help wonderfully in exposing the faults of dry-plates, and other points, and, by exposing them, do much ultimately to remedy them, by writing down facts and making it warm where it is needed, and a few could so start it that the result would soon be apparent, *if* only they would try.

(To be continued.)

MOSAICS, 1889.

THE contributions to *Photographic Mosaics* came with such unexpected promptness that when we came to fit them together for our purpose, we found that the later arrivals must be crowded out, as all the pieces would not fit into the space marked out for the limit of the little year-book. It is an advantage to the readers of our magazine, however, for, as usual, we submit the overflow

to them in these pages. We begin this issue by presenting a number of such, and will follow on until the pieces are all properly fitted.

Mosaics is now being pushed rapidly forward, and we expect in our next issue to announce its entire finish. In order that you may all prepare yourselves to welcome it, we add below a list of the contents; not naming, however, the pictorial attractions, which are to be announced hereafter.

It is predicted by the friends of *Mosaics* that this number—the 25th of its life—will prove unusually attractive and acceptable. All those who have the issues from the beginning, will want to complete their sets, and thousands will find *Mosaics* a splendid little gift for an amateur friend or photographic admirer, and adept as well. Do not depend upon your dealer to present you with a copy of *Mosaics*, but send early and get a copy before your neighbor is ahead. We commend it to you, with the belief that it is quite as useful as in the past, and we would not err very much if we said it was the best issue we ever sent from our press.

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The Camera in Camp. By W. I. L. Adams.

How to Make "Egyptian Photographs." By E. N. Lockwood.

How to Idle Profitably. By E. Long.

Permanent Photographers. By J. Pitcher Spooner.

The Wonder of It. By H. S. Keller.

Suggestions for Beginners. By Wallace Goold Levison.

Quadrumanous Development, etc. By Frank LaManna.

Some of the Practical Uses of the Magnesium Flash-llght. By L. C. Overbeck.

A New Fixing Formula. By J. H. Reed.

Try It, if You have not Done So. By F. M. Rood.

A Light to Develop By. By Gustine L. Hurd.

The New Printing Method that Gives Engraving Blocks. By E. K. Hough.

Rough on Blisters. By R. K. Bonine.

Cleaning Ferrotype Plates. By C. J. Billinghurst, Orange Heights, Fla.

Less Water. By M. H. Albee.

The Hydroquinon Developer. By William McComb.

The Novitiate's Acrostic. By J. J. Higgins, A.M., M.D.

More Art, and More Women Wanted in Our Art. By A. Lee Snelling.

The Mailing of Photographs. By Ranald Douglass.

A Table of Space Traversed—Of Time Occupied—Of Velocity Acquired—by a Falling Body. By J. J. Higgins, A.M., M.D.

Besides the above there will be a whole "gallery" of artistic process-pictures by various photographers and reproducers. *Mosaics* costs, cloth bound, $1.00; paper cover, 50 cents, postage paid.

Editor's Table.

We have received from Chas. Cooper & Co., manufacturing chemists, 194 Worth Street, New York, a circular neatly printed, giving instructions for the saving of photographic wastes.

This firm has the largest facilities for smelting, and do more in that line than any other house. Moreover, it is thoroughly reliable.

Roberts & Fellows send us a list of their war slides. There are eighteen of these from the celebrated works of M. de Thulstrup, and a lecture is supplied with them. The circular is sent to applicants free.

L. C. Overpeck, Hamilton, Ohio, sends us a circular of directions for using his flasher at night and in connection with daylight. Those who saw Mr. Overpeck's work at the Minneapolis exhibition will remember to what excellent use he was able to put his flasher, and it was demonstrated by him how useful it can be to the photographer—night seeming morning.

H. E. Noble, Lincoln, Neb., has favored us with a picture of his little girl, a very excellent profile of a cute little child about two years of age, taken in his new gallery. His skylight is a southern one and has no side light except two windows. It is only a temporary building occupied while his old site is being rebuilt after a fire, and the light is a difficult one to work, but he has certainly secured very soft and pretty effects, in this instance at least.

California. — If any of our readers, with slightly impaired health and weak lungs, are looking toward California as a residence, we have information which will be useful to them. A well-established studio there is for sale at a fair price, on reasonable terms, the owner and occupant desiring to rest a little and improve his ranch. We have known him for quite twenty years. He has made money and is able to retire. Whoever desires to, go and do likewise.

Leaf Prints.—Mr. G. G. Rockwood, No. 17 Union Square, New York, presents, as an advertisement to his patrons, a very beautifully printed circular in blue, with full instructions how to make leaf prints by the "blue" process. Mr. Rockwood is up to all sorts of schemes for advertising his business, and seems to understand just how and whom to treat.

We have received from Mr. O. P. Scott, of Chicago (Secretary of the P. A. of A.), four of the magnificent direct portraits from 20 x 24 plates, which attracted so much attention and obtained for him a grand prize at the Minneapolis exhibition. These have been sent to us for reduction for a future embellishment of our magazine, and our readers will presently see how splendid they are.

In Case Lots.—Mr. John Carbutt now supplies his plates of all brands at a special price in case lots ranging from one to thirty-six dozen, according to the size. We need say nothing for Mr. Carbutt's plates. They are immensely popular, and this new method will be taken advantage of by many who are always ready to get the best price.

Aristotype Paper.—Scovill Manufacturing Co., 423 Broome St., New York, are now prepared to supply Aristotype paper of all sizes, from 3 x 4 to 20 x 24, put up in three dozen and gross packages, or packed in case lots. Send for their circular, and remember to ask also for the opinion of an expert on their *Instantané* lens.

Photo-engraving, Photo-etching, and Photo-lithography.—It is surprising in how many directions this new book has insinuated itself. It is waking up photographic interest, and particularly in directions where it was never known to work before. We are pleased at this since we have been instrumental in being useful to so many people by the production of this book. Photographers who overlook it are making a mistake. They should, at least, be posted on all that goes on concerning their business, and be ready to meet any demand that comes.

Mrs. E. N. Lockwood, Ripon, Wisconsin, has kindly sent us two views of her house and studio combined; first, the house, of neat design, with tower and oriel windows; and then the store or reception-room, with the art gallery, and adjoining this, all fronting on the street, is the splendid skylight. Everything neat and in good taste seems to be here, and prosperity has at-

tended it from its inception. Mrs. Lockwood contributes an article to *Mosaics* on Egyptian photographs, of which she makes a specialty. It will be well to look into this subject.

Col. V. M. Wilcox, besides being a Major-General in his own business, was a gallant soldier during the civil war. He has just returned from a re-union of his regiment, the 132d Pennsylvania Volunteers, at Danville, Pa., where he addressed his fellow-comrades. After that he and his son, Dr. Wilcox, visited the battlefield of Antietam and made a number of views of the old sites.

Returned from Europe.—Mr. J. H. Huiskamp, the treasurer of the M. A. Seed Dry Plate Co., has returned from Europe in excellent health and much pleased with his journey.

Fire Again.—We regret to learn that the studio of Mr. Cooke Ely, of Oshkosh, Wis., has been almost totally destroyed by fire. A very nice, hard-floor studio, recently fitted up with excellent taste, has gone to earth; but with good spirit and vim, Mr. Ely hopes soon to erect even a better one upon the ashes of the old.

More Babies.—Mr. Will H. Foote, Flint, Mich., has favored us with another bundle of babies—very excellent photographs and very sweet in attitude and expression. The gem of the lot is one that is called "Hark." He caught the baby just as the four letters were coming out of its little mouth, and eyes wide open. It is an admirable catch.

The Society of Amateur Photographers of New York are involving music, mesmerism, flash-light photography, and lantern exhibitions in their curriculum. We have received tickets for the lantern exhibition on October 30th of slides made by members of the Society. Doubtless it will include some excellent things.

We find in the recent pages of some of our English contemporaries, reports of several novel suits which have no little interest for many of our readers. These suits have been instituted against certain German manufacturers of card mounts, or their English agents, for damages, the plaintiffs, who are photographers, alleging that they had suffered loss by reason of the inferior quality of the goods which they purchased from the agents of the German manufacturers. We await with much interest the issue of these cases; meanwhile we counsel our readers, as we have heretofore done, to secure themselves against such loss, and the possible necessity of vexatious and costly litigation, by purchasing their supplies from the reliable stock of home manufacturers of established reputation. Experience teaches that low-priced goods are seldom cheap to the user.

Mr. B. J. Falk, 949 Broadway, New York, has prepared a petition to Congress for a measure permitting photographers to pay an annual sum for copyrighting all their works. Mr. Falk has issued a circular embodying his ideas, and will be glad to send a copy to any photographer requesting it.

Carbutt's Substitute for Glass.—Few veterans are so progressive as John Carbutt, the original dry-plate maker of Wayne Junction, Philadelphia. Few of the readers of our magazine were more surprised than we were at seeing his advertisement in our last number of a substitute for glass. Mr. Carbutt assures us that there is no doubt but that he is able to exclaim "Eureka!" We shall prove this by our own trials very shortly, and make full announcement.

Mr. Carbutt has recently introduced the Edison electric light into his factory, and his men are now working overtime with the light in their lamps. When will wonders cease!

The "Positive Printing Process upon Albumen Paper." By Dr. E. A. Just. The capital articles under this head, which have been appearing in our pages since our issue of May 5th, have been most practical and valuable. We regret that their conclusion is reached in our current issue. Every American photographer is indebted to Dr. Just for his excellent help, and we tender him the public thanks. Every printer in Austria and in the East, almost, uses the excellent albumen papers of which he is the manufacturer in Vienna.

Society Gossip.—The following is the list of officers elected by the Cleveland Camera Club at its last election:

President.—C. S. Pomeroy, D.D.

Vice-President.—M. Rogers.

Recording Secretary.—C. H. Potter.

Corresponding Secretary.—Dr. R. Dayton, 5 Euclid Avenue.

Treasurer.—C. E. Cole.

Directors.—W. N. Gates, F. J. Dorn.

New club rooms No 19, No. 5 Euclid Avenue.

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.



VIEWS
reproduced in this popular form, at lowest prices, from prints or negatives.
A. Wittemann,
60 Reade St., N. Y.

"Perfect Preservative" for keeping sensitized papers:

Sample Box, large size . . 30 cents.
" " small " . . 18 "

Post-paid to any part of the United States.
Buchanan, Bromley & Co.,
Sole Agents, Philadelphia.

Now is the time to read good photographic books. Read our advertisements.

Look out for Heathrington's new backgrounds for children, they are the novelties you want, they are cheap, no reason why every photographer should not have a set. Ask Smith & Pattison, 261 and 263 State Street, Chicago, for particulars.

The finest portraits in the quickest time are made with Voigtlander & Son's new "Portrait Euryscope."

For Sale.—A newly furnished gallery in a Texas city of 21,000 inhabitants. The reception-room is 15 x 40 feet, printing-room 15 x 15 feet, operating-room 20 x 40 feet, skylight 15 x 15 feet ground glass, side light 4 x 15 feet. Dalmeyer lens. Only one man in opposition; will sell for $800 cash. Address,
Deane, Photographer, Waco, Texas.

---

30 Per Cent. Discount.

For a trial order, large or small, to introduce our plates to new customers. Try us and get our prices for regular supply. Plates guaranteed as good as any on the market. Smith & Harrison, Dry-plate Co., Iowa City, Iowa.

For Sale.—Echard's Gallery at Columbus, Miss., price, $1200, including complete outfit, known as the leading gallery in Mississippi. Only gallery in the city with a large trade from surrounding towns. 15,000 negatives on hand. Two entrances, two reception-rooms. Specially built printing house. Water and gas in the gallery. A large frame trade. Columbus has 6000 population, wealthiest city in the state, magnificent residences, fine public schools, State Industrial Institute and College, with 500 young lady students. New cotton factory opens December 1st.
W. C. Echard, Columbus, Miss.

The quickest and best lens for the studio and outside work is Voigtlander & Son's "Extra Rapid Euryscope."

Wanted.—A young man who is a good operator and a fine retoucher. State salary.
James McKeown, Anderson, Ind.

If you are troubled with albumen paper send ninety cents to Smith & Pattison, 261 and 263 State Street, Chicago, for a sample dozen of their Globe Pensé paper, and you will want a ream at once, it is a remarkably fine article. Price per ream quoted on application.

FOR SALE.—Entire phototype outfit, including lithographic hand press.

WALKER, Fifth and Green, Phila., Pa.

$50 REWARD!

For the arrest and conviction of a person describing himself as an agent in our employ, who has been endeavoring to defraud photographers, and by his reports damaging our business.

He has been described as an Englishman, sandy hair and complexion, clean shaven face, deep sunken eyes, large mouth, full round rough voice, a quick talker, and evidently well posted in photography.

This party has traveled through Pennsylvania inside of three weeks, and appeared in Pittston, Scranton, and Towanda, also in Waverly, N. Y., and endeavored to swindle photographers in each of these places.

His method is to offer extraordinary discounts for cash, claiming the M. A. Seed Dry-plate Co. will sell to photographers extra fine goods from the factory, and offers a special formula of developer, stating our present developer is bad and has been withdrawn.

All of these statements are fraudulent, both as regards stock and our method of doing business, as we sell to photographic dealers only. *Let all Photographers take warning.*

M. A. SEED DRY PLATE CO.,
1202 Washington Ave.,
N. Y. Office, 2 Bond St. St. Louis, Mo.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

IT is a settled fact that the Quadruplex Enameler is the King of Burnishers, the four cog wheels and the improved one hand set screw put it clear ahead of all competition. SMITH & PATTISON, Manufacturers, 261 and 263 State Street, Chicago.

For general outside work the "Rapid Euryscope," made exclusively by Voigtlander & Son, is positively unrivalled.

IMPERIAL Negative Reducer, for either dry or wet plates. Manufactured only by GEORGE MURPHY, Sole Proprietor, No. 2 Bond Street, New York. Price per pint bottle, 80 cents.

SITTLER'S IMPROVED CHEMICALS,

For printing on Silk, Satin or Linen. Guaranteed to work if directions are followed. Two bottles with full instructions, for $3.00. You can make at least $50.00 out of it.

We print on handkerchiefs, ribbons, scraps of silk and satin for patch-work, hat marks, book marks, banners, etc. They are nice for birthday, holiday, or wedding presents.

We make the following charges which we give for the benefit of the fraternity: Where we have a negative, $1.00 for each print on scarf, handkerchief, etc., customer furnishing goods. Where we have to make a negative, we charge from $2.00 to $2.50, which gives a handsome profit. We dampen and press the work before delivering, as it is nicer.

References: G. Cramer; Mallingkrodt Chemical Works; or Drey & Kahn.

MRS. G. W. SITTLER,
220 & 222 St. Louis St., Springfield, Mo.

The "Rapid Euryscope," fifth series in the importers' price-list, yields the most accurate definition with most beautiful and delicate detail of any lens yet produced.

CARBUTT'S ECLIPSE PLATES.

I have perfect success with your "Eclipse 27 plate" with "Blitz Pulver" and your "Hydrochinon." I can ask nothing better. I shall use your plates altogether in future. I have tried three other makes but had trouble with them all. S. RUFUS MASON,
PURPLE CRANE, NEB., September 14, 1888.

Try Richardson's Glacé Lubricator.

WANTED, to make up a file, the PHILADELPHIA PHOTOGRAPHER for Dec. 3, 1887. Fifty cents will be paid for the same, or *Mosaics*, 1888. Please try and oblige. EDWARD L. WILSON,
853 Broadway, New York.

WANTED.—The *live* photographer everywhere, to issue special-rate photo. checks in combination with our *glass tablet photo mounts.* Is new; takes at once.

We mount cabinet size prints for photographers for $1.00 each, transportation paid by us. E. K. TALCOTT, 216 Northampton Street, Boston, Mass.

BUY BURNET.

ADT'S PATENT PAINTING FRAME.—The printing frame of the future. Considering the construction of the Back-board, the Patent Tally, and the Elastic Felt Pad, the Adt Patent Printing Frame is the cheapest and best in the market,

PRICES.

3¼ x 4¼	$0.50	6½ x 8½	$0.75
4 x 5	50	8 x 10	85
4¼ x 5½	50	10 x 12	1.15
4¼ x 6½	60	11 x 14	2.15
5 x 7	65	13 x 16	2.40
5 x 8	65	14 x 17	2.80

When made with backs to open lengthways, an additional charge of ten per cent. will be added to the foregoing prices.

Now in stock.

GEORGE MURPHY,
2 Bond St., New York.

1878. 1888.

SAMUEL G. NIXON,
Artist,
154 North Ninth St., Philadelphia, Pa.

Photographic enlargements furnished and finished in Crayon, Ink, or Water Colors.

Send for 1888 reduced Crayon price list. Highly finished work at low prices. Will alter pictures after delivery, if returned.

Photo-Engraving, Photo-Etching, and Photo-Lithography.
Just ready. Price $3, post-paid. See advertisement.

A VERY VALUABLE AND IMPORTANT WORK ON PHOTO-ENGRAVING.

An entirely new branch of the art and reveals for the good of the picture-making fraternity what has long been kept a secret from them. It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson).

Part I.—Photo-engraving in Line. Part II.—Photo-engraving in Half Tone. Part III.—Photo-engraving on Copper. Part IV.—Photo-lithography in Line. Part V.—Photo-lithography in Half Tone. Part VI.—Collographic Printing, including both Heliotype and Collotype processes. The various subjects treated on are copiously illustrated, and the book admirably and very completely indexed. Price $3.00.

EDWARD L. WILSON, Publisher,
853 Broadway, New York.

FOR SALE.

1 Imperial photo press, R. Hoe make, in good order	$25 00
1 7 x 10 Press, good order	10 00
1 12 x 15 Rubber Bath Holder, air-tight top	3 00
1 15 x 19 Rubber Bath Holder, air-tight top	4 00
1 15 x 19 Glass Bath Holder	6 00
1 16 x 20 Glass Bath Holder	6 00
1 Silvering Room Gas Stove	5 00
1 20 x 25 Bath Holder	10 00
1 Circular Rustic Tree Seat	4 00
8 x 10 Printing Frames, each	25
11 x 14 Printing Frames, each	35
14 x 17 Printing Frames, each	50
1 New 11 x 14 Optical Co.'s View Box revolving back, Barnett holder	50 00
1 4 x 5 View lens	3 00
5 x 8 Old Negatives, not retouched, each	1
8 x 10 Old Negatives, not retouched, each	2
1 14 x 17 View Camera, with Plate Holder	8 00

PACH BROS.,
841 Broadway, N. Y.

The "Extra Rapid Euryscope" is *par excellence* the lens for the amateur.

TALCOTT'S PATENT GLASS MOUNTS.

NASHUA, N. H., March 13, 1888.

E. K. TALCOTT, ESQ.

DEAR SIR: I desire to express my unqualified satisfaction with your very superior Patent Glass Mount. It almost invariably calls forth loud praises for its beauty, brilliancy, and novelty, from all whom I supply, and its undoubted durability makes it a valuable acquisition.

Yours respectfully,
A. C. AUSTIN.

Are you wise not to look into the subject of Photo-engraving? Such work is being demanded by every industry to-day. Study up the Subject and be ready. See advert of Mr. Wilkinson's new book. Post free, $3.00.

To FERROTYPERS.—The Eagle Ferrotype Collodion. Use it for fine effects.

GEORGE MURPHY,
2 Bond St., New York City.

CRAYON
PORTRAITS ON SOLAR ENLARGEMENTS.

BY E. LONG.

Few who have not read this complete little volume can realize what a help it is to the beginner in this line of study. The author has written not from theory, but from long experience, and the ready sale of the second edition of the work bears testimony to its value.

The beautiful study of crayon portraiture is here simplified and made interesting even in the monotonous detail of smoothing and stippling, and new tools for working are introduced which insure a rapid and perfect finish.

The subjects of studio arrangements, position of the artist from a physiological standpoint, etc., together with the varied and intricate details of features, drapery, hair, beard, lace, background, etc., are treated of carefully and concisely.

The work is not so large as to render its perusal tiresome, and the pleasant style in which it is written will interest as well as instruct the reader.

Mailed to any address for fifty cents.

EDWARD L. WILSON,
853 Broadway N. Y.

Now is the time to read good photographic books. Read our advertisements.

PROFESSOR W. K. BURTON'S BOOK ON PHOTO-MECHANICAL PRINTING PROCESSES continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated, and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.—*Anthony's Bulletin.*

NEW SULPHITE OF SODA (Crystallized).—Price: In 5 pound cans, $1.00, 1 pound cans, 35 cents, ½ pound cans, 25 cents. For sale, wholesale and retail, by

GEORGE MURPHY,
No. 2 Bond Street, New York.

HANCE'S Ground Glass Substitute makes a splendid backing for window transparencies and glass stereographs. It softens the light wherever used.

Try Richardson's Glacé Lubricator.

STAMP PORTRAITS!

THE ONLY AND ORIGINAL.

Perforated and Gummed like postage stamps, and the only Stamp Portraits covered by Letters Patent. Issued July 12, 1887.

Having purchased from Kuhn Bros., the Letters Patent covering the manufacture of *Stamp Portraits*, also on the *Apparatus for making the same*, we hereby notifiy and caution all infringers that legal action will be taken to protect said letters patent.

Send for trade price list.

No less than one hundred made from one subject; for larger orders special prices will be made.



MINETTE STAMP PHOTOS.

Taken from any Cabinet, or Card, or Small Photograph.

Made in sheets, perforated and gummed, four times larger than the "Stamp Photo." No less than two dozen from one subject made.

Address all orders to

H. A. HYATT,
N. E. Cor. Eighth and Locust Sts.,
St. Louis, Mo.

Territorial Rights and Complete Outfits for sale.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

IT is a pleasure to know that all of the best photographers in the city of PHILADELPHIA are using Three Kings Albumen Paper. Price per dozen, 90 cents; per ream, $32.00; second choice, per ream, $24.00.

BUCHANAN, BROMLEY & Co., Importers,
Philadelphia.

JUST OUT.—The Stoddard Print Roller, the best in the market. Price, $1.00.

GEORGE MURPHY,
No. 2 Bond St., New York City.

A SECOND EDITION

JUST RECEIVED FROM ENGLAND,

PROF. W. K. BURTON'S NEW BOOK,

Practical Guide to Photographic and Photo-mechanical Printing Processes.

Price, $1.00.

MARION & Co., Publishers, London.

The well-known author says, "The object of this work is to give practical instructions in the working of all processes which are in actual everyday use at this date."

The *Amateur Photographer* (London, Feb. 3d) says, "Any matter from the pen of Prof. W. K. Burton (of the Imperial University, Tokio, Japan) deserves and commands attention by all workers in photography. . . . We are sure it (this book) will be their constant reference-book."

Mr. Burton's capital papers in the *Photographic Times* have made him very popular in America, and his book will prove welcome to his many friends here.

Copies mailed on receipt of price.

EDWARD L. WILSON,
853 Broadway, New York.

Buy Books pertaining to your art. Consult our catalogue and be master of your art.

VIOLET LIGHTNING FLASH.—(Brutum Fulmen.) This compound is made by a new formula, and produces the most powerful actinic light yet discovered. It contains neither acid, chlorate of potash, nor animal charcoal. It oxygenizes more rapidly than any flash compound heretofore offered, and may be used on card-board or glass with safety.

Twenty grains is quantum sufficit for an ordinary flash (instead of forty to sixty grains, as stated on our copyrighted directions). According to subject, distance, quality of lens and rapidity of plates used, vary the above quantity. A twenty-grain measuring-cup is sent with every bottle. Handle with care.

BUCHANAN, BROMLEY & Co.,
Manufacturers,
Philadelphia, Pa.

Get Wilson's "Quarter Century in Photography," $4.00.

BUY BURNET.

TO PHOTOGRAPHIC MERCHANTS.

NEW YORK, September 1, 1887.

GENTLEMEN: We have now opened a *New York Depot* for the benefit of our Eastern patrons. From this depot orders will be delivered to any New York Freight, Express, or Steamboat office. Address M. A. SEED DRY PLATE Co., No. 2 Bond St., New York. A. R. HUISKAMP, Manager.

Read the best books. Consult our advertisements.

THE PLATINOTYPE for Photographers, Solar Printers, and all Copyists. Platinotypes are permanent, and a license to work the process costs very little. Send ten cents for sample portrait and book of instructions.

WILLIS & CLEMENTS,
1112 Hunter St., Philadelphia, Pa.

Photo-Engraving, Photo-Etching, and Photo-Lithography. Just ready. Price $3, post-paid. See advertisement.

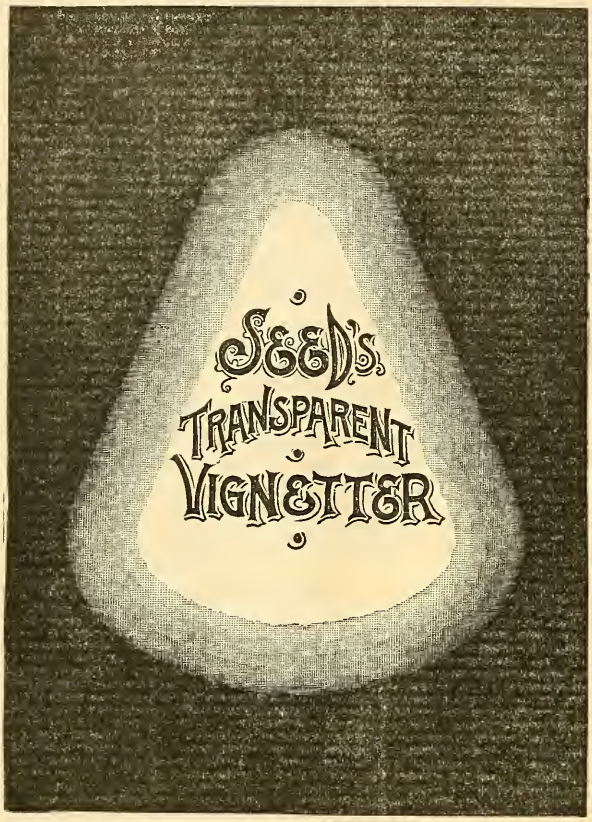
I HAVE received your Burnet and prize it very highly, as it is a great assistant in the studio. I consider it invaluable to any Photographer or Artist.

F. W. GUERIN, St. Louis, Mo.

Try Richardson's Glacé Lubricator.

THE PLATINOTYPE for Amateurs; simple to work, and the results artistic and beautiful. Send ten cents for sample landscape and book of instructions. WILLIS & CLEMENTS,
1112 Hunter St., Philadelphia.

Are you wise not to look into the subject of Photo-engraving? Such work is being demanded by every industry to-day. Study up the Subject and be ready. See advert of Mr. Wilkinson's new book. Post free, $3.00.



SEED'S PATENT VIGNETTERS.

CHICAGO, May 25, 1888.

Messrs. M. A. SEED Co.

GENTS: The Seed Vignetters you sent me, I am very much pleased with. They make a perfect vignette, are very easily adjusted, and being perfectly transparent in the centre, allow the negative to print as rapid as a full figure with a plain background. They are a necessity for every printing room, and must soon come into general use.

Yours truly,
ALEX. J. W. COPELIN.

ST. LOUIS, May 15, 1888.

Messrs M. A. SEED Co.

GENTS: I have tried your Vignetters and consider them the best I have ever used, as they do away with all tissue-paper; and vignettes can now be made as fast as plain prints. I shall use no other.

PIPER, with F. W. Guerin.

To be had from all dealers.

M. A. SEED DRY PLATE Co.,
1202 Washington Ave.,
St. Louis, Mo.

SITUATIONS WANTED.

No charge for advertisements under this head; limited to four lines. Inserted once only, unless by request.

By a first-class retoucher, in some Western first-class gallery. F. D. Woodard, Millbury, Mass.

As printer and learn retouching, one year's experience. G. E. Engle, 142 N. 8th St., Lebanon, Pa.

By a young lady as retoucher, in or near Boston. Address, Miss W. F. Kendall, Atlantic, Massachusetts.

By a young lady who has had several years of experience in a first-class studio in London; as retoucher, attendant, manager, or operator. Is able to conduct a photo-business entirely. Best of references. Miss Bell, care Mrs. Simpson, 104 E. 10th St., N. Y.

By a first-class operator and retoucher in a city of not less than 10,000. E. E. Whiting, Carrollton, Mo.

By an experienced lady retoucher who understands spotting and reception-room work. W. A. A., Holyoke, Mass.

First-class young lady retoucher wants permanent position. Best of references. G. N. F., 215 W. Springfield St., Boston, Mass.

As first-class printer and toner. Samples and reference shown if required. Address, J. W. Long, 90 Elliott St., New Haven, Conn.

By a first-class operator and fine general workman, would take full charge of a paying business. C. I. Page, 191 E. Main St., Rochester, New York.

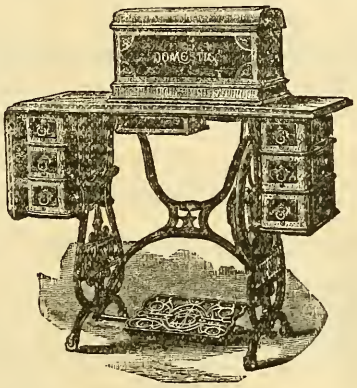
IT STANDS AT THE HEAD!

THE LIGHT-RUNNING

"DOMESTIC"

MANY IMITATE IT. NONE EQUAL IT.

Is made of the best material. Will do any and all kinds of work. And is complete in every respect.



The largest armed. The Lightest Running. The Most Beautiful Woodwork, and is Warranted.

DOMESTIC SEWING MACHINE CO., Broadway & 14th Street, New York.

DISTRIBUTING OFFICES: Chicago, St. Louis, Kansas City, Detroit, Milwaukee, Richmond, San Francisco, Cleveland, Cincinnati.

HANCE'S

PHOTOGRAPHIC SPECIALTIES.

PURE AND RELIABLE.

DOUBLE IODIZED PORTRAIT COLLODION,
ANDERSON'S PORTRAIT COLLODION,
FERROTYPE COLLODION,
HANCE'S GROUND GLASS SUBSTITUTE,
HANCE'S DELICATE CREAM GUN COTTON,
HANCE'S SILVER SPRAY GUN COTTON.

Manufactured from the best chemicals that can be procured in the market, manipulated with the greatest care.

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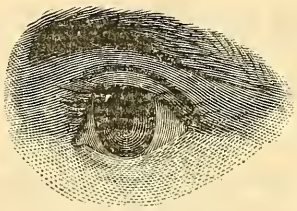
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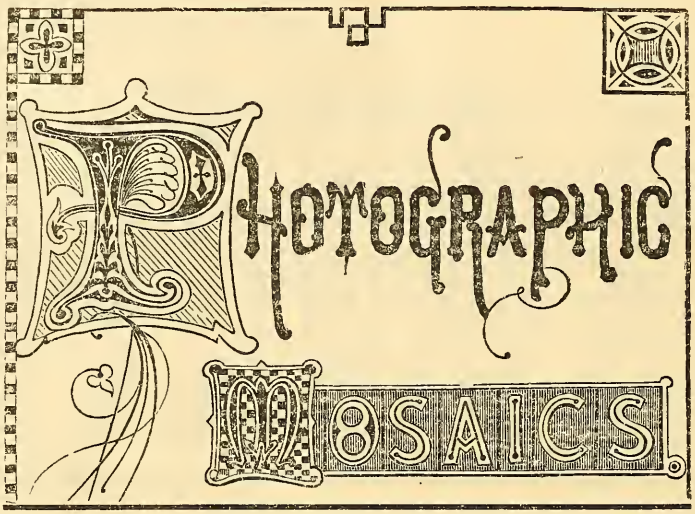
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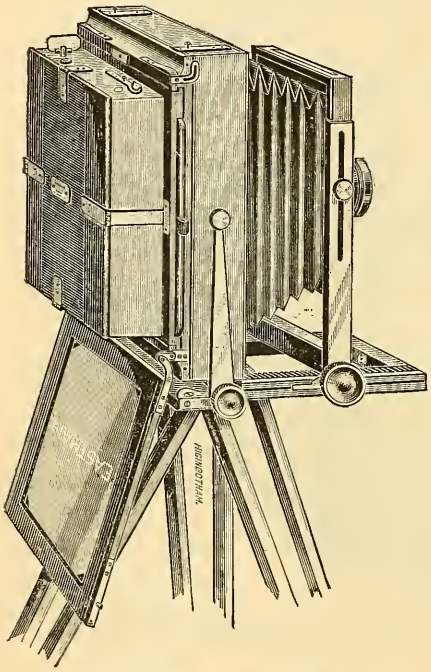
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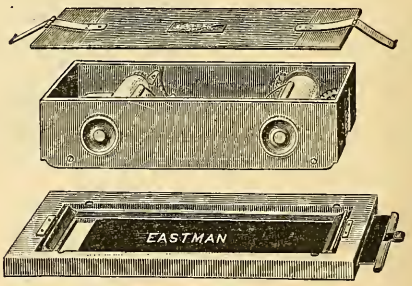
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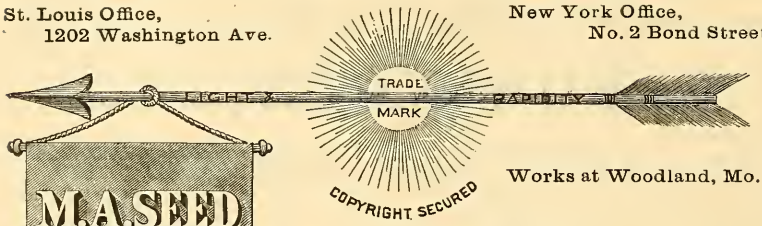
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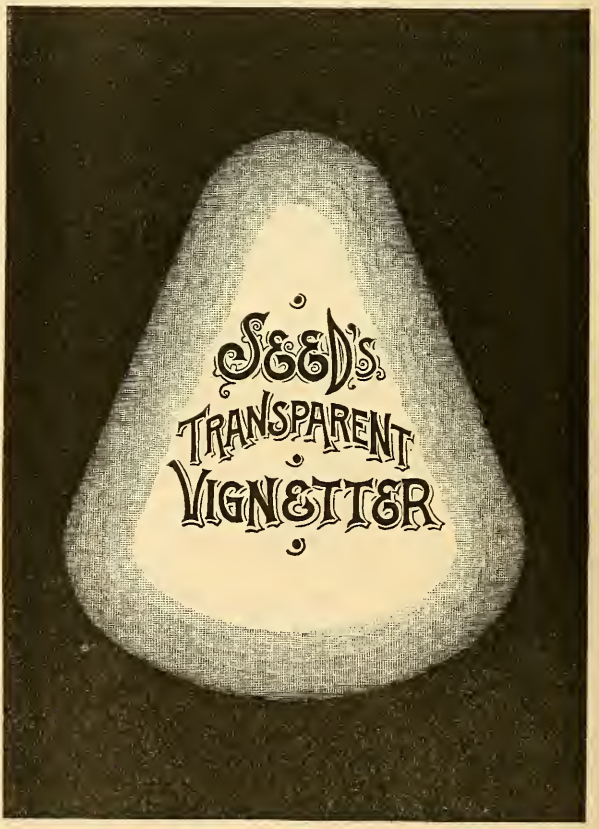
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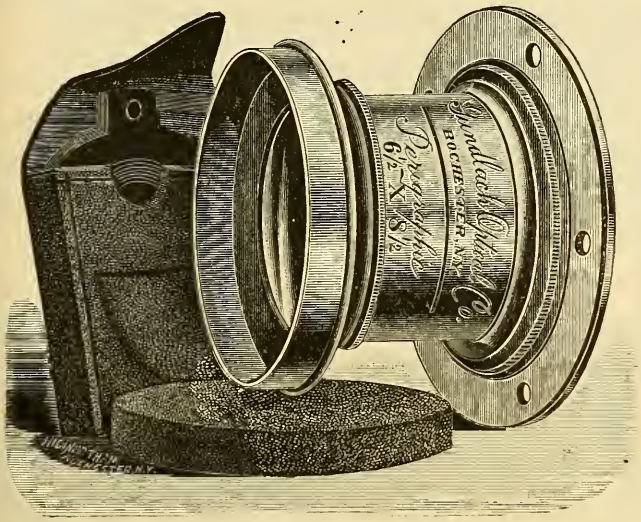
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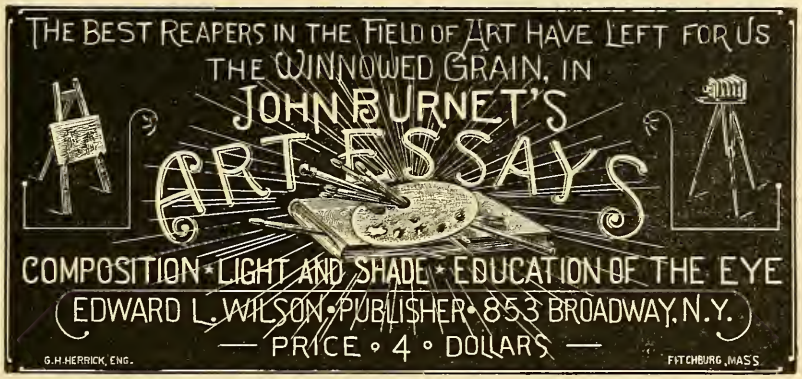
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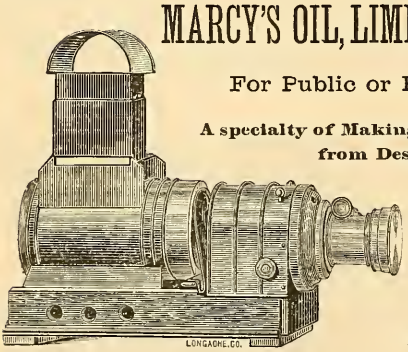
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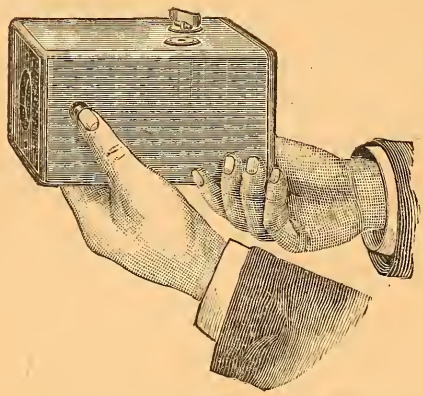
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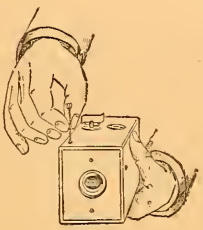
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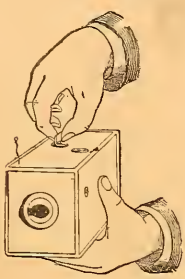
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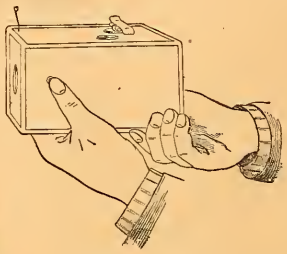
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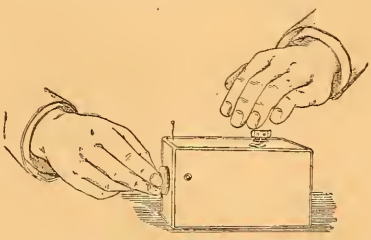


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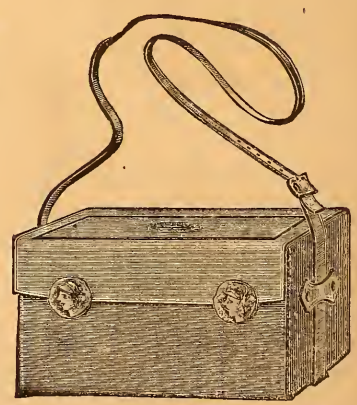
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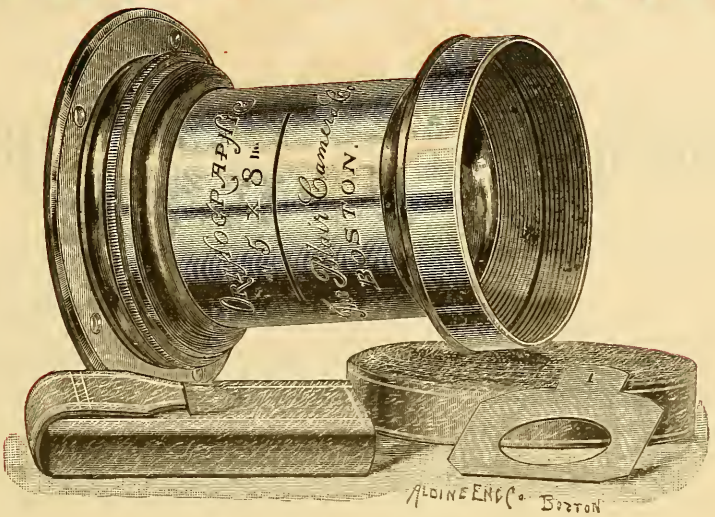
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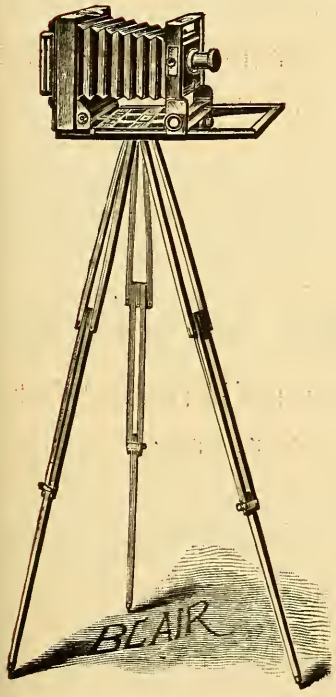
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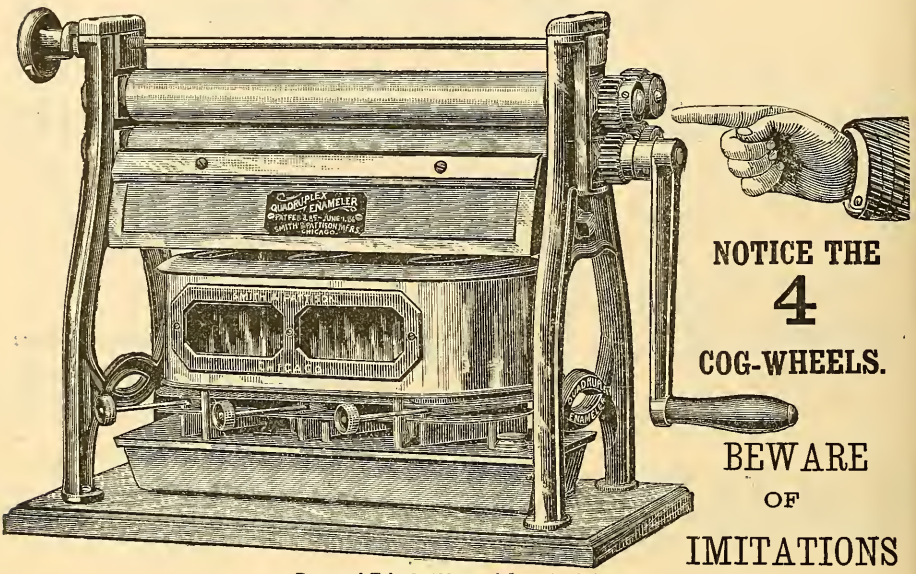
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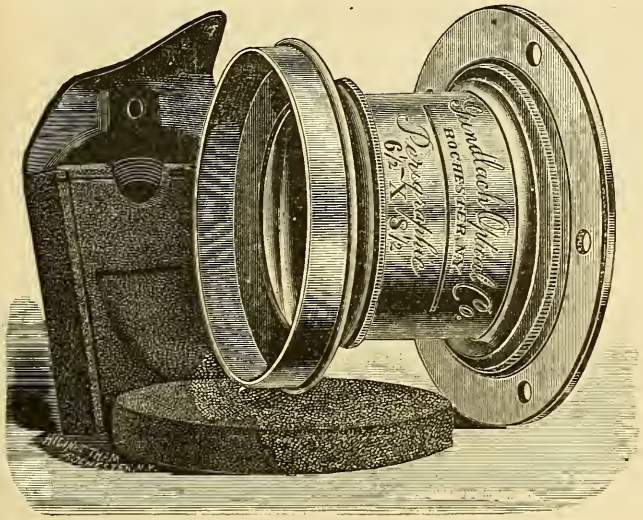
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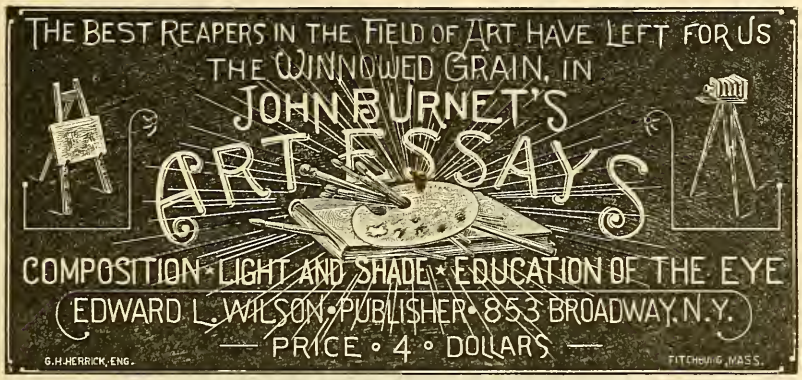
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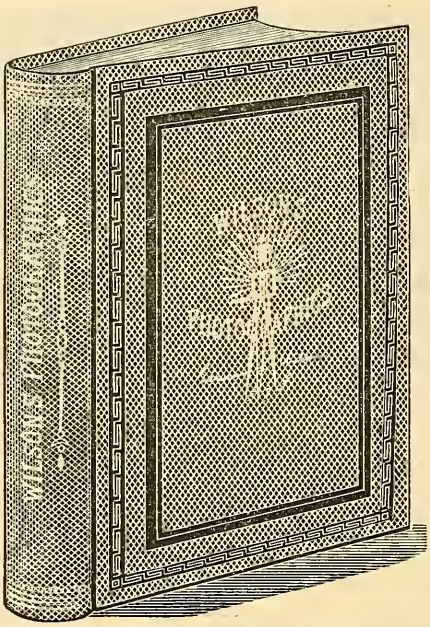
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NEW YORK.

A BUD IN THE APPLE TREE.

THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. NOVEMBER 17, 1888. No. 334.

THE PHOTOCRANK.

BY CLARENCE B. MOORE.

What a character strange is the photograph crank,
With a nature uniquely his own;
While other men's dreams are of riches or love,
His are pyro or hydroquinone.

He may chat of elections, of racing, or ball,
Of true love by the light of the moon;
But these little digressions are very short lived,
He gets back to the camera soon.

At breakfast he's talking of chloride of gold;
At dinner, of portraits from life;
At supper he's showing some sick-looking prints—
How I pity the photocrank's wife.

Tis a trifling affair when express trains collide
And adjourn to the sweet bye-and-bye;
Compared to the time when two amateurs meet:
I tell you they make the fur fly.

Free trade or a tariff? It's a question to-day
Pervading all classes and ranks.
Here's a platform broad which would sweep the whole land,—
Protection from photograph cranks.

October, 1888.

OUR PICTURE.

The picture which embellishes our current number—"A Bud in the Apple-tree"—is from a negative made by Mr. Charles H. Davis, a member of the Amateur Camera Club of Plainfield, New Jersey. It has been named by the artist, "A Bud in the Apple-tree," and speaks for itself. It has been reproduced with excellent success by the Photogravure Co., New York. We have been released from saying more about it than to praise the sweet simplicity and lovely æsthetic qualities which it possesses, by Mr. Davis himself, who contributes an article on the artistic elements of picture-making in another place.

The great charm of his picture is its thorough absence of pretension as a composition. As the author states, the tree was there, and started the idea of the composition; it was simply the artist's work to lift the fair young subject to her place; to pose her naturally and properly; then to watch the chance for light and shade and to make the exposure. All this has been done with admirable effect. We present it to our readers through the generosity of Mr. Davis, as an example in genre composition, with the suggestion that more of this class of picture-making be sought after by lovers of the camera. It is also intended to begin a series of pictures of this nature which we shall present in our coming issues. Many of them will represent the natural beauties of our country, together with the industries most closely related to said natural beauties. We have in preparation a picture illustrating the grape culture of our country, which will appear in our issue of December 15th.

THE ELEMENTS OF BEAUTY IN A PICTURE.

BY CHARLES H. DAVIS.

An artistic picture, produced by any process, photographic or otherwise, must con-

tain the elements of beauty. Precisely what these consist of is, however, not easy to define, but the picture must possess inherent grace and repose in its composition; and, also, a certain artistic balance in its various points of interest. A proper arrangement of light and shade is equally necessary, but beyond and above all these things, if it is devoid of the indefinable something known to artists as "feeling," it will not rank highly as a success. It goes without saying, that the more striking parts should be brought out in contrast with weaker portions, and, finally, that the eye must be satisfied with the effect as a whole, or it will be obliged to move uneasily over the picture seeking to excuse some inconsistency or unfortunate neglect.

The worker who is endowed with artistic tastes will get on the best, but those who have not this gift need not despair of producing good results. Do not imagine that you can hit the mark off-hand. The best artists arrange and rearrange their models until the eye is pleased. No amount of inborn taste, or studious application and rehearsal of art principles will enable you to succeed every time—for you will not. Expert marksmen do not always wing their birds. Only the greatest care and assiduity in learning to see properly will enable you to achieve success. You must study the lines of your picture before it is too late and the subject gone. Try and see it in all its lines and masses as it will appear on a single plane.

If, after the most careful arrangement, you discover a flaw, remove it, even at the cost of delay or a postponement of the sitting, rather than make an indifferent picture, for, as Robinson truly remarks, "the world is already flooded with indifferent pictures."

"Good enough" never was, and never will be a winner. Avoid confusion of lines or points of equal strength to distract the eye. A "symmetrical irregularity" constitutes a paradox, but it is quite often the making of a picture. Your intent may be good and the result may be a failure, and only too plainly show your inability to reach the high level of art—if so, hide your failure and try again, for orthodoxy has a place that is said to be paved with good intentions, and a few additional can do no harm. A line of beauty must underlie, at least in general effect, any meritorious and pleasing figure composition. Straight lines may accent its beauty if rightly placed, and often do, but beware lest they introduce a discordant note. It is not often necessary, or even desirable that strongly marked lines should be present, but a careful study of the great works of art, that depend for their charm upon one or more figures, will invariably show sinuous and harmonious graces as exemplified in the return curve or line of beauty.

Many of the mere portraits made daily might easily become pictures if more thought and regard for grace were put into their execution. The eye is easily delighted, if lines of beauty are introduced. Subordinate the angles. Let the beauty of the figure reveal itself, and compel the drapery to add to its contour rather than detract from it; and arrange the lights and masses to further increase the charm by putting into shadow such portions as do not enhance the general effect.

Successful pictures are usually the result of much thought. Even the humble effort that appears herewith was not an accident. I saw the tree, with its sturdy branch, a year before, and recognized the opportunity for a picture. The limb being at some height from the ground, it was difficult to seat and pose the model, but after patience and many trials I was finally rewarded with the picture I have named "A Bud in the Apple-tree."

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 665.)

Orthochromatic Work.

Ever since the discovery by Daguerre and Niepce, and especially so since Mr. Scott Archer, in 1851, made known his collodion process upon glass, has it been the dream, desire, and aim of the photographer to discover some way by which he might be able to reproduce the object in the natural colors, as seen by the eye, thus relieving photography from the opprobrium

cast upon it, that it was not a truthful representation of the original. From time to time announcements of processes for reproducing photographs in natural colors have been made, but in each case has the claim been proved to be fallacious, the prints having been more or less successfully tinted by hand. The orthochromatic process, by which the sensitive film, either in the state of emulsion or upon the plate, can be dyed by some one of the aniline dyes, and thus rendered more sensitive to certain colors, and giving color values to the negative and the prints, is a step, and a long step, in advance. But that it should continue only in this direction—*i. e.*, as regards plates, I am not prepared to admit. It seems to me that whilst trying to make the plates so very sensitive to colors, it should also be the aim of these able scientific experimenters to prepare a paper that will respond to the color-rendering negative. It may be that some of the beautiful subsalts of silver, lately discovered by Mr. M. Carey Lea, of Philadelphia, will yet play in this way a very important part in the reproduction of natural colors. It is only since 1882 that any decided and practical steps have been taken to render plates color-value giving, or orthochromatic. Still later, the preparation of these plates has been so simplified by the staining with color a ready-coated plate, instead of sensitizing the emulsion, that the demand for them has been largely increased and the use of them has produced valuable and beautiful results, especially in copying of oil paintings and bright and varied landscapes, etc. We all know that the eye is more quickly affected by the yellow, orange, and green rays, and that substances which emit or reflect these rays appear the most bright and luminous. But, unfortunately, on the contrary, gelatino-bromide plates are the most sensitive to the blue and violet rays, and only slightly so to the green and yellow, therefore the blue and violet, which seem dark to the eye, are rendered almost white in the photograph, and the yellow, orange, and green are reproduced dark. In order, therefore, to produce pictures with correct gradations or color values, the sensitiveness of the plates to the yellow, orange, and green rays must be very greatly increased, and their sensitiveness to the blue and violet must be correspondingly reduced, or held in check. This increased sensitiveness to the yellow, green, and orange is obtained by treating the gelatino-bromide plate with certain coal-tar dyes. Though of great number, the spectroscope researches of a great many observers have from the many hundred experiments only resulted in the selection of a few reliable dyes from the eosin group and cyanin. Of the eosin group erythrosin is the most valuable, rose Bengal comes next, and then eosin itself, which, without doubt, is inferior to both the preceding.

These dyes increase the sensitiveness of the plate for yellow and yellowish-green, but less so to orange and green. Cyanin makes the plate more sensitive to orange and yellow, and to a small extent orange-red and green. Cyanin plates do not keep well, being very liable to fog. Chlorophyl prepared from the blue myrtle or periwinkle, Ives has found either alone or combined with eosin to show a marked sensitiveness to red. How and why these dyes act as sensitizers is not yet clearly understood. Whether these rays of yellow, orange, and green act on the dye and silver salt simultaneously, or act upon the dye alone, has not been yet ascertained. That these dyes exert a very strong absorptive action on these rays is well known, as is also the fact that the treated film of the gelatino-bromide plate also exerts a strong absorptive action on these rays too. For general use erythosin is the most useful sensitizer, and can be used with gelatine plates either alone or in combination with silver; and it may be either mixed with the emulsion or a ready coated plate can be steeped in a solution of the dye. The latter way is the more convenient, and experience has shown that plates bathed in the solution are at least three or four times as sensitive as those in which the dye has been added to the emulsion before coating. I would advise you to prepare your own orthochromatic plates, as the process is easy, and only requires care and semi-darkness. Either of the two following baths will be found good for this process:

No. 1.—The Preparing Bath.

Water	7 ounces.
Ammonia	34 minims.

No. 2.—The Coloring Bath.

Erythrosin Solution (1 : 1000 of Alcohol)	7 drachms.
Ammonia	7 "
Water	5¼ ounces.

Immerse the plate, like a Carbutt B, two minutes and twenty seconds in No 1; remove and drain well, then transfer to No. 2 to remain seventy-five seconds and no longer, remove and dry by standing on edge on clean blotting-paper in the dark; when dried is ready for use. Or soak the plate, same rapidity as the former, for two or three minutes in a one per cent. solution of ammonia, and then for two minutes in

Erythrosin Solution (1 : 1000 Water)	1 part.
Ammonia Solution (1 : 10 Water)	1 "
Water	3 "

Drain the plate standing on edge, and dry in the dark. After bathing about six plates a little more ammonia should be added to the bath. These plates will keep under proper precautions at least a month. More rapid plates than I have recommended are extremely liable to fog, oftentimes apparently without any known cause. The general sensitiveness of plates treated this way is increased above three times. Though the sensitiveness to yellow, etc., has been increased, the sensitiveness to blue and violet has not been greatly reduced, therefore it is necessary when these colors predominate or are very striking to interpose a transparent screen between the object and the plate to obtain correct gradations. This screen must be applied in such a way as not to interfere with the working of the lens and disturb the sharpness of the image. Thin crystal glass plates may be coated with colored collodion (aurantia or tumeric being used to color the collodion), and placed behind the lens: but the best way is that proposed by Eugler, to cut out a diaphragm from cardboard, one side of which is gummed and pressed down on the collodion film, already prepared in the ordinary way upon a glass plate. When the gum is dry, the film is cut around the card with a knife, and the cardboard diaphragm is lifted off carrying the film with it. The depth of the tint on the screen modifies the result very much by cutting off a greater or less proportion of the blue and violet. For general work the screen should be yellow, not orange, and not too deep; if too much so, too much of the blue and violet are cut off, and the gradations are rendered inaccurate in the opposite direction. A full lemon yellow will be found the best tint for all-around work.

With the screen the length of the exposure is increased two or three times more than without it. The deeper the tint of the screen, of course, the longer the exposure required.

It seems hardly necessary to call your attention to the care necessary to be observed in the preparation or development of these plates. Absolute cleanliness and a very weak light, I might say almost darkness, is required. They fog readily from too much, to them, light, and a very slight trace of the vapor of turpentine in the dark-room will cause the same evil result. Observing these pit-falls, the plates are developed in the usual way, and by the usual developers. They are very hard to intensify, and retain at the same time their color values. And I would not advise you to try it. If the negative is thin, print under tissue-paper or colored screens. They are still more difficult to reduce if too dense.

Retouching.

It is not my intention to elaborately describe this process, but I shall speak of it in a general way. You know that negatives frequently require that some defect on them be hidden or removed; the process by which this is done is called retouching. But unfortunately this is now too often carried to extremes. What can look worse than to give a wax-doll appearance to the rugged, furrowed face of an old man, or remove all appearance of a likeness in a photograph, so much so that the mother who bore her would not know her own daughter after the negative leaves the hands of some of these retouchers.

The requisites to retouch properly are an easel; long, finely-pointed graphite pencils, four will be sufficient, one soft and black and the others increasing in hardness; some fine sand- or emery-paper; a retouching varnish, some finely-powdered pumice-stone, and for landscapes some colors in oil. Landscape negatives are often very much improved by doctoring a little or retouching, and as they concern the amateur generally more than portraits, it may be well to mention some of the ways in which their appearance is improved and their printing results benefited. You may possibly have noticed that the grass in the foreground is usually more transparent than it should be, and in the print this part of the picture is decidedly too dark. This is frequently the case, also, when a light-colored building is in too near proximity to the dark foliage of trees; this is caused by the difference of exposure required by the two. The trees require very much more than the building. You can overcome this disparity by the use of pale washes of color painted on the back of the negative, either by brushes or by the fleshy tips of the fingers, but a very little will be required. Burnt sienna mixed in oil and mastic varnish is highly recommended. As it is a powerful obscurer of light be careful of the amount you use By this means mountains can be made to retire as it were in the distance, if they present too obtrusive an appearance. Thin, dirty, uneven skies can be painted out or clouds introduced, sometimes with much advantage, or the sky having been carefully blotted out, clouds can be printed in by using a cloud negative in double printing as it is called. Small pin-holes and small abrasions on the film should be carefully filled up by the use of pencils. It is without doubt best that all amateurs should be more or less familiar with the legitimate art of retouching, and though quite a number of books, more or less valuable, have been published on the subject, still I think that when possible the amateur should place himself under the instruction of some good retoucher, and by carefully watching his instructor and attentively following the instructions given, he will in a few lessons be able to understand quickly and intelligently the various processes as set forth in the books. Especially does he need to see by his own eye the various strokes required in retouching by the pencil, the manner of making those strokes in the quickest and most efficient way, and the results produced by them.

(To be continued.)

HOW A CLUB BUSINESS IS WORKED IN ENGLAND.*

BY C. C. VEVERS,
Horsforth, Leeds, England.

Bad trade and great competition have been of late years a sore trial to all British photographers, except, perhaps, a lucky few who are at the top of the tree, and whom neither bad trade, competition (the one a natural sequel to the other), or anything save the vagaries of fashion can effect. The average photographer has seen his trade gradually grow less and less, till, to meet the competition of the semi-amateurs and "Cheap Jacks," who have suddenly sprung up on every side of him, he has been obliged to devise new plans to induce his former patrons to pay him a second visit, unless, indeed, he also sinks to the level of the "low-priced (*not* 'cheap') John" of the "Celebrated Parisian Carte-de-visite Saloon and Shooting Gallery" across the way. Thus the second- and third-rate photographer has hit upon the "club system," which has been found very successful, if not conducive to portraiture suitable for exhibition purposes. It has, however, the advantage of making bad debts practically impossible, while the working classes, many of whom could not pay money down for half a dozen carte-de-visites, can now procure a first-class oil painting without feeling the cost.

I have no doubt "club work" has long ago been unearthed in America, but as your method of conducting such a business may differ somewhat from the one generally in vogue in England, I will briefly describe how a system that has proved very successful over here is worked.

Many photographers push two or more classes of work at the same time, but this, I

* Written for the Photographic Mosaics, but received too late.

am convinced, is a mistake, as it only tends to confuse both customer and photographer. The latter will have plenty of work to run one style as it should be, and whatever it is, he must make it his specialty, advertise, and speak of nothing else, and vary his prices and minor details as little as possible, so that this particular photograph, at a certain price, is firmly fixed on every one's mind.

Now, as to style and price of work: we have the £5 5*s.*,* oil on canvas, in English gold frame; the £2 2*s.*, porcelain (opal) monochrome, and twelve carte-de-visites; and the 35*s.*, oil on cardboard, and twelve carte-de-visites; the 25*s.* enlargement, in oak frame, and twelve carte-de-visites; the 12*s.* 6*d.* "imperial" portrait and twelve carte-de-visites; and, lastly, two enamelled cabinets and twelve carte-de-visites for 7*s.* 6*d.* Surely these prices are low enough; yet they will all pay if worked properly. The most popular is the 12*s.* 6*d.* club, and this is the one I will take as an example. To explain the work more fully, I may say that a whole-plate ($8\frac{1}{4}$ x $6\frac{1}{2}$) negative is taken, either full length or three-quarters figure. It is retouched a little, and a full-sized print is made; this is roughly mounted, and framed in a two and a quarter inch gilt frame, which costs about 1*s.* 7*d.*, inclusive of a flock or tinted mount with oval, dome, or square opening. This forms the imperial portrait, which is "backed up" by a bold advertisement in place of the usual brown paper. Then, *from the same negative*, twelve carte-de-visite heads are printed, either medallion or plain out. Thus the sitter gets a full-length framed picture and twelve carte-de-visites head and bust portraits for 12*s.* 6*d.* Recently this class has been modified by offering a larger frame and more imposing mount, six cabinets, and twelve carte-de-visites for 15*s.*; but this, I fear, is cutting it rather close, and is verging too much on the "Cheap John" business.

Next, as to the practical working of the club. The scheme is, in the first place, well advertised and handbills distributed, then two or three "appointing agents" are engaged. These men (who are paid five per cent. commission on the gross receipts), provided with first-class samples, visit all the factories, workshops, warehouses, offices, hairdressers, grocers, and other stores in their districts. In each of these places, or, if the establishment is a large one, in each department, an agent is appointed to start a club. He (or she, for women prove remarkably quick in forming a club), is provided with a set of specimens, a quantity of stationery, and full instructions how to go to work; and, what is of most importance, his commission (2*s.* on every 12*s.* 6*d.*) is mentioned to him. It now depends almost entirely on this person whether the club is to be a success or not. The agent selected should be, if possible, one of the foremen, quick witted, a favorite with the hands, and one with time to push the club. Or if the agent is owner of a store, he must be disposed to exhibit his specimens in a good position, and to push the club as though it were a part of his ordinary business. The specimens are shown and the nature of the club explained to fellow-workmen or customers, as the case may be, and twenty-five induced to join the club. He then gives each member a card (provided, of course, by the appointing agent) on which he can enter all payments and sign each with his initial; he also enters each member's name on a special card for his own use, which is also ruled for entering payments. The members subscribe 6*d.* per week, so that, if all pay promptly, sufficient (12*s.* 6*d.*) for one sitting will be taken every week. With this the agent proceeds to the studio, and, having deducted his commission, he receives for the 10*s.* 6*d.* paid a numbered check (a duplicate of which is kept by the photographer) entitling one person to sit for "one imperial portrait and twelve carte-de-visites, value 12*s.* 6*d.*;" an extra charge being made for groups, children, and resittings. The members now raffle (draw lots) for the check, and the winner presents it at the studio at his own convenience, and in due time receives his pictures. In the meantime the members continue to subscribe and sit in turns every week until the club is worked out, when the agent, if inclined, will endeavor to form another. In some

* $1 = 4s. 2d.$ English. £1 (20*s.*) = $4.80.

establishments as many as four clubs at a time are managed by one agent, so that it forms a lucrative employment if his heart is in it.

In running a better-class club the ordinary agent is dispensed with and a "collector" substituted. To this man the sitter pays his 1*s.* or 2*s.* 6*d.* per week, the collector giving him his receipt, as in the former case; or, what has been found to prevent fictitious collectors obtaining money, he is provided with adhesive labels about the size of a postage-stamp, with various amounts printed thereon, and when a payment is made, a stamp bearing a corresponding amount is attached to the "member's card," printed in squares for the purpose. This is a very good plan, and is used by many firms for the cheap clubs only; for the collector having every evening to account for all used during the day, it prevents dishonest agents collecting money and not handing the whole of it over to his employer.

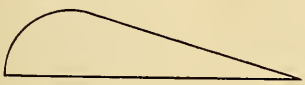
When the member has paid half the value of the painting he is entitled to sit and receive the dozen cartes, and by the time the picture itself is finished he will probably have subscribed the whole amount. If not, it is the custom of the photographer to retain possession until the necessary payment is made.

A POINT FOR THE PRINTER.*

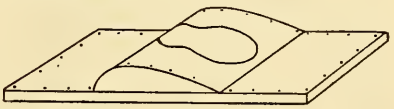
BY LORIN E. MILLER.

I CAN claim no originality for the contrivance we use for vignetting, but as we have been able to secure better results, with much less time and trouble, with this than any other means we have ever employed, and never having seen it in print, I send a description of the same.

I cut with a scroll-saw from boards about three-quarters of an inch thick, two pieces in this shape



I nail two pieces together, thereby cutting a pair at a time. I make for cabinets a variety of lengths and heights, from three to five inches in length, and from one-half to seven-eighths inches in height. I then take a pair and nail one on each side of the printing frame, about the centre, with the highest part of blocks toward the top of frame. I then tack on the face of frame a piece of card-board with a square or oblong opening cut in it, considerably larger than the vignette cut-outs I wish to use, tacking the card-board closely, so that it follows the face of the frame up over the block, down on to the frame again, thus:



I then fasten on my cut-outs (made of post-office paper) with stick paper, using the shape and size best suited to the negative. I find in using this plan that our vignetters are quickly adjusted, and the results second to none, giving that soft gradation so much to be desired.

Some persons may infer from my description and drawings that the results obtained with this would be identical with those where the card-board has a gradual incline from the base of the frame to the top, but that is not so; try it and see.

[*Translated for the Philadelphia Photographer.*]

HYDROQUINONE FORMULA.

BY M. G. BOUILLAUD.

I HAVE tried all the numerous formulas published since those of Mr. Balagny, but starting from a point of view entirely different from that generally admitted, I have modified, with entire success, the proportion of the salts entering into the composition of the developer. In my opinion, the quantity of carbonate generally indicated is greatly insufficient. In the fear of frilling, the quantity was restricted, but this is a grave error. Soda or potash, at whatever degree of concentration they may be used, *never* causes blisters, even during the hottest weather, and they offer immense advantages: 1st, a rapidity which, so to speak,

* Written for Photographic Mosaics, but received too late.

has no limit; 2d, absence of fog; 3d, clichés much softer and of extraordinary general harmony. Finally, a maximum rapidity of action, to such a degree that a cliché of short exposure is developed in two or three minutes, even with plates that are longest to develop by the ordinary processes.

Here is my formula:

Carbonate of Soda	.	250 grammes (8 ozs.).
Sulphite of Soda	.	69 " (2 ozs.).
Water	.	1 litre (34 fl. ozs.).

Dissolve with the aid of heat the two salts together, filter and add 10 grammes (154 grains) of hydroquinone.

The mode of development for a normal exposure does not differ from that actually in use; but if by chance the exposure should have been too short, which may happen for some instantanieties, here is almost an infallible process to obtain à good effect.

Commence first by making the following solution:

Carbonate of Potash, pure		500 grammes (16 ozs.).
Sulphite of Soda	.	60 " (2 ozs.).
Water	.	1 litre (34 fl. ozs.).
Hydroquinone	.	10 grams. (154 grs.).

Should the cliché be but slightly underexposed, add of this last solution from twenty to fifty per cent. to the ordinary soda developer. If, on the contrary, it is much underexposed, pass the cliché in the pure solution. In either case the details come up *instantaneously*. Wash, fix, and finally place in the alum bath. By using carbonates, in large doses, the sensitiveness has no limits, the development is rapid, there are no blisters nor fog, and the clichés are more perfect and more harmonious than by any other process.—*Moniteur*.

TWO WANTS.*

BY SAMUEL JENNINGS WHITE,
Philadelphia.

TWENTY-FIVE years ago out-door photography was a difficult and disheartenting process, worked only by the expert; now it is so easy that hundreds of fashionable young people have adopted it as a summer pastime.

To effect this change, chemists, physicists, and instrument-makers have labored steadily and, of late years, the mechanic has frequently lent aid. As a result, we have lenses, sensitive films, and camera boxes capable of yielding uncriticisable results (when properly handled), and so many different processes of development and printing that a list of their names alone might well dissuade future inventors from entering the field.

Yet, in spite of this reckless waste of inventive energy, there still remain two or three things which we have not attained, and which are greatly needed in every-day experience. Foremost amongst these comes the need of a simple, compact, and effective *actinometer*, an instrument for estimating the actinic power of light reflected from any object or group of objects. By its use we could calculate the time required for any exposure, without the trouble of consulting the endless series of tables provided for the purpose. It is not intended here to throw any discredit on the use of such tables, for, in the hands of the careful observer, they are most excellent, but where economy of time is an object, their slowness is against them, and in the hands of the novice they are always inaccurate.

A second need, of scarcely secondary importance, is that of an *automatic* time exposer, for putting in practice the data furnished by the actinometer. It must give a range of exposures from two seconds down to one-tenth second (or even less) with accuracy; must be perfectly automatic, and must conform to the requirements of photographers at least as well as the best unautomatic exposers now on the market. As photographers regard these requirements differently, it may be well to mention some that I consider most important. The exposer must be compact and durable, its shutter should operate in a plane passing through the optical centre of the objective at right angles to the axis, and should open first at the centre of aperture. It should open and close quickly in comparison to the total exposure, and should open to any required maximum distance, thus acting as a diaphragm, or else be used in conjunction with the regular series of stops. Finally, its construction must be sufficiently simple to admit of excellent

* Written for Mosaics, 1889, but received too late.

mechanical workmanship at a moderate price.

Provided with these two necessities, a photographer could make every negative a success, so far as timing is concerned; without them there must always be a doubt, frequently corrected by careful development, but not unfrequently causing the loss of the negative. In neither of the two requirements is there any unusual mechanical or optical difficulty, and it is to be hoped that instrument-makers will soon overcome what obstacles there may be, and provide us with efficient apparatus for this line of work. As the task belongs to the instrument-maker, and not to the amateur, I shall not be so discourteous as to give details of construction in either case. Perhaps a statement of the want may help create a demand, and that in turn may promise something to the pocket-book of the manufacturer, and spur on his inventive power.

HOW TO REJUVENATE FOGGED PLATES.*

BY H. F. FRASSE,
New York.

LIKE many amateur photographers, I am not blessed with a dark-room, but have to make the kitchen, bath-room, or even a closet answer the purpose. This being the case, and having no particular place of storage for my accessories, it would not be surprising that my chemicals or necessaries become occasionally misplaced.

One night during the past winter I acquainted my better half with the fact that I would spend the following morning in photographing some of the nooks in the surrounding country. Addressing me, she said: "Willie opened the package of dry plates this morning, and if those are all you have you will not be able to get any pictures to-morrow." As that package was all I possessed, the news did not put me into an amiable humor; still, I was not completely disheartened, and resolved to put into practice an experiment which I had often tried with success.

I lighted my orange lantern and locked myself in my sanctum. Taking a glass dish which would hold a 5 x 8 plate, I poured therein six inches of a solution composed of ten grains of bichromate of potassium to the ounce of water. In this solution I laid the exposed plate, taking care that the liquid should cover its surface with one sweep. I allowed the plate to soak about five minutes, then put it in clear water for an equal space of time. Soaking the plate in clear water for five minutes is sufficient to remove any superfluous bichromate. I treated the dozen of exposed plates in like manner, and placed them on a drying-rack in a cupboard, where no actinic light entered; when they were dry I put them into their holders. The next day I issued forth, camera in hand, with not much hope of obtaining success. The first picture tried was a glen, where the light did not enter strongly; I uncapped the lens and gave the plate forty-five seconds exposure. Another was a view of a well lighted valley; I did not make any allowance for the fact that the plate had been doctored, but gave the normal exposure of three seconds. The other subjects were treated as if I had been using new plates. Upon developing, I found the second view was over-exposed, and it was with difficulty that a satisfactory negative was obtained; whereas those treated normally, furnished excellent prints. The plates were Cramer's, medium rapidity, and, if I remember, of about twenty-four sensitometer. The above may be quite antiquated, but as I have all of the editor's best productions, and as I never came across the process for rejuvenating fogged plates until I happened to stumble over it, I offer it for what it is worth.

I would suggest to dry-plate manufacturers in general, that they use more care in selecting thin glass for $3\frac{1}{4}$ x $4\frac{1}{4}$ and 4 x 5 plates. I use a good many gross of both sizes during the twelve months, and am much troubled on account of some plates being too thick to put them into the double backs. A deep scar on my thumb attests the difficulty I had while trying to force an extra thick 4 x 5 into a holder. No doubt the manufacturers desire to economize as far as possible, but they should not use the scraps and cuttings of various thicknesses for the small

* Written for Mosaics, 1889, but received too late.

sizes. Let us have some uniformity; and, if the manufacturers decide that a certain size shall have a certain thickness, let the holders be made accordingly. If the stock-dealers would insist on this matter, the makers would furnish goods satisfactory to the user.

A NEW AUTO-STEREOTYPE PROCESS.

How to obtain a *fac-simile* plate from printed matter is a problem that has long exercised the ingenuity of inventors, and some very elaborate processes have been devised. While any such process is liable to abuse by affording facilities for piracy, it has a wide field of useful and legitimate application. A correspondent of the *English Mechanic* describes an auto-stereotypic process lately invented in Switzerland, and successfully used at the celebrated establishment of Orell, Fussli & Co., Zurich. It appears to be simple, and requires no costly appliances. It is thus described:

Plaster-of-Paris, best quality, is mixed with water, to make it a thin putty, and without lumps, and to this a little alum or salt is added to make it set quickly. To every 5 pounds of the plaster are then added: Silicate of potash, or silicate of soda, 3 ounces, phosphate of lime, 2 ounces. The mixture thus obtained is then put upon a perfectly level piece of plate glass of the desired size, around which iron rods are placed, and left to get hard. The plaster cast ought to be at least type-high, to prevent breakage. While the mass is setting, the back ought to be scraped level, and should remain undisturbed until it is perfectly dry and hard. After that it may be taken off, and it will be found to be as smooth as the glass itself.

The paper to be reproduced is next placed, with the side to be copied down, in a dish which contains the following transferring solution: Distilled water, 16 ounces; alcohol 90°, 5 ounces; acetic acid, ¼ ounce; phosphate of soda, ¼ ounce. Care should be taken not to get the solution on the back of the paper which is not to be transferred, as it is then liable to print through when it is drawn through the transferring press. Should the print to be copied have been printed for some time, it is desirable to warm the solution, and float the paper longer on it. The sheets should be left on the solution for at least two hours to insure perfect action. In the meantime, the plaster-of-Paris plate, which was completely dried before, is prepared in a dark room. A solution of 5 ounces of gelatine in 12 ounces of water is prepared by letting the former soak for half an hour, and then heating it to about 190°. Care must be taken to prevent the boiling of the solution. To this, 6 drachms of citrate of iron and ammonia, and 2 ounces of alcohol are added and well filtered. This is when still warm. Put into a flat dish covered to a depth of about ¼ inch. It is well to put this dish upon a hot metal plate, as it gets hard quickly when getting cold. The plaster-of-Paris plate, which itself is warmed first, is dipped in the solution on the smooth side for a moment, thus letting it take up some of it, whereupon it is taken out and dried in the dark. When dry, the copy is transferred upon it in the usual way, the plaster having been placed between rubber sheets, to prevent it from breaking. Of course, also, this has to be done in the dark room, that is at lamp- or gaslight. The plate is then dried once more, and exposed to direct sunlight for fifteen minutes. When taken out, the places where the light has acted will be found to be quite hard, while at the other places the plaster is soft, and will fall off as fine powder as deep as the solution has penetrated, if brushed with a hard brush. After that the plate is ready to be stereotyped.—*Typo.*

[*Translated for the Philadelphia Photographer.*]

THE ENLARGEMENT OF SMALL NEGATIVES.

BY E. AMMANN.

Very likely it would be pleasant to many amateurs to learn of a simple means of enlarging negatives. I asume that every one possesses two photographic apparati. One 9 x 12, perhaps, the other 18 x 24; both cameras with an excellent aplanat of short focus are sufficient for this purpose.

Now, the larger apparatus is placed upon the table, and the objective placed in it, and

the smaller camera is brought to the proper height before the objective, so that the faint disc looks opposite to the objective, and the objective is between the two cameras. Now, to proceed to the enlargement. It is first necessary to produce a diapositive from a good negative, which is easily done by exposing a plate under the negative referred to and developing it with hydrochinon, which is best adapted for this purpose. To obtain a sharp enlargement, it is necessary to develop the diapositive strongly. The diapositive when ready is brought to the place of the weak disc in the small camera, thereby to insure the illumination becoming uniform, it is well to place behind the positive a weak disc. The nearer the diapositive is pushed toward the objective the greater is the enlargement, which also requires a longer removing of the apparatus 18 x 24. Now, if the positive is brought in, it is arranged without a stop, as sharp as possible, then the smallest stop put in and exposed. For a bromide silver plate of medium sensitiveness, at least five minutes are requisite. In this way I have enlarged instantaneous plates, 9 x 12 to 18 x 24. The enlarged negative was of equal sharpness as the small. I have shown this enlarged picture to experts, who thought at first that they had a direct picture before them.—*L'Amateur Phot.*

REWARDS FOR MERITORIOUS DISCOVERIES AND INVENTIONS.

EDITOR PHILADELPHIA PHOTOGRAPHER:

The Committee on Science and the Arts of the Franklin Institute of the State of Pennsylvania, respectfully requests that you will cause to be made known to the readers of your influential journal, the fact that the Committee is empowered to award or to recommend the award of certain medals for meritorious discoveries and inventions, which tend to the progress of the arts and manufactures.

These medals are:

1. *The Elliott Cresson Medal* (gold).—This medal was founded by the legacy of Elliott Cresson, of Philadelphia, and conveyed to Trustees of the Franklin Institute. By the Act of the Institution, May 17, 1849, the Committee on Science and the Arts was designated and empowered to award this medal, and the Committee decided to grant it, after proper investigation, and report by sub-committee, either for some discovery in the arts and sciences, or for the invention or improvement of some useful machine, or for some new process, or combination of materials in manufactures, or for ingenuity, skill, or perfection in workmanship.

2. *The John Scott Legacy Premium and Medal* (twenty dollars and a medal of copper).—The John Scott Legacy Premium and Medal was founded in 1816, by John Scott, a merchant of Edinburgh, Scotland, who bequeathed to the City of Philadelphia a considerable sum of money, the interest of which should be devoted to rewarding ingenious men and women who make useful inventions. The premium is not to exceed twenty dollars, and the medal is to be of copper, and inscribed "To the most deserving."

The control of the Scott Legacy Premium and Medal (by Act of 1869) was transferred to the Board of Directors of City Trusts, and referred by the Board to its Committee on Minor Trusts, and that committee resolved, that it would receive favorably the name of any person whom the Franklin Institute may from time to time report to the Committee on Minor Trusts as worthy to receive the Scott Legacy Premium and Medal.

The Franklin Institute, by resolution in 1882, accepted the above-named action of the Committee on Minor Trusts, and referred the duty of making such recommendations to the Committee on Science and the Arts. The Committee determined that the recommendation for such reward shall be made on the favorable report of a sub-committee which shall be appointed to examine the invention or discovery.

The Committee requests your coöperation in facilitating the making of the aforesaid awards for meritorious discoveries and inventions, by bringing the facts herein set forth, to the knowledge of your readers.

Upon the request, therefore, from interested parties, made to the Secretary of the Franklin Institute, full information will be sent respecting the manner of making appli-

cation for the investigation of inventions and discoveries; furthermore, the Committee on Science and the Arts will receive and give respectful consideration to reports upon discoveries and inventions, which may be sent to it with the view of receiving one or the other of the awards herein named, and full directions as to the manner and form in which such communications should properly be made, will be sent on application.

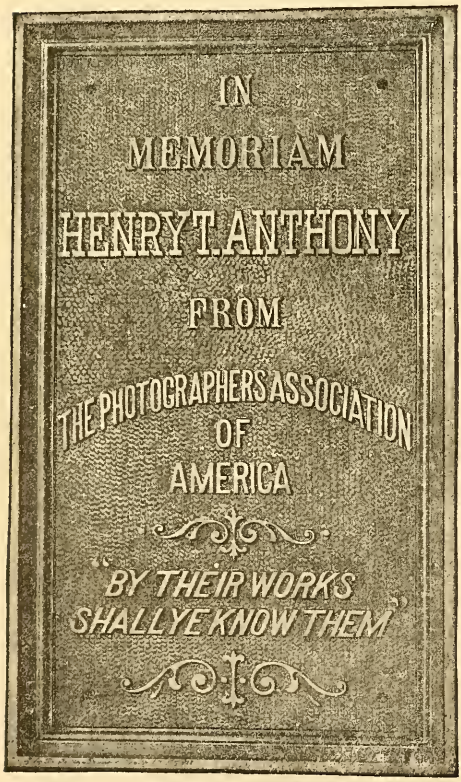
By the Committee's order,

WILLIAM H. WAHL,

PHILADELPHIA. Secretary.

THE H. T. ANTHONY MEMORIAL.

OUR readers will remember that at the P. A. of A. Convention, held at Chicago in 1887, a committee was appointed to procure



a memorial tablet to be placed in the store of Messrs. E. & H. T. Anthony & Co., 591 Broadway, New York, in remembrance of the late Mr. Henry T. Anthony, whose name and fame are so closely connected with the progress of our art. At last the committee has finished its work, and the tablet has been placed. It was designed and cast by the Henry Bonnard Bronze Company, of New York. It is of bronze, neat and substantial looking, and as unpretentious, though solid, as was the character of the noted one in whose honor it has been erected.

Below we append the correspondence on the subject, and a photo-engraving of the tablet, supplied by the courtesy of Messrs. E. & H. T. Anthony & Co.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA,
CLEVELAND, O., October 18, 1888.

MESSRS. E. & H. T. ANTHONY & Co.

GENTLEMEN: The photographers of America for many years knew Mr. Henry T. Anthony as a man of integrity and a zealous worker in the domain of photographic art. It is probable that they owe more to him than to any other man in America for the success that, for more than a quarter of a century, was obtained by American photographers in the working of the collodion process in its various applications to the production of the negative and positive. And the process of fuming with ammonia, which has been of such signal advantage in photographic printing, removing so many causes of failure, and at the same time improving the character of the print, is also due to his experiments.

No photographer who ever had the pleasure of meeting and conversing with him, will ever forget his kindness and patience in imparting information. All such feel that they have lost a personal friend.

The Photographers' Association of America wishing in some way to express that feeling, and to perpetuate his memory in some suitable form, appointed the undersigned a Committee to see that the wishes of the Association were properly carried out. In attempting to do so we thought that the best way of perpetuating the memory of so valuable a worker in our art, was to present to E. & H. T. Anthony & Co. this bronze tablet, to be erected in their place of business, as a slight token of the appreciation of the work

of the late Henry T. Anthony, by the photographers of America.

Fraternally yours,
E. Decker,
Charles E. Smith,
S. V. Courtney,
Committee.

591 Broadway, New York, October 22, 1888.

To the Committee of the
Photographers' Association of America.

Gentlemen: The letter of your Committee came duly to hand, together with the bronze tablet mentioned therein.

The house receives with great pleasure this beautiful testimonial of the esteem in which the memory of the late Mr. Henry T. Anthony is held by the Photographers' Association of America. They have rightly estimated his character. Ever since he became interested in photography his life had been devoted to the improvement of the art in every direction. With a keen eye to denote minute chemical effects, and an excellent memory to retain them, so that he could combine them at the proper time, he was constantly producing results which in his own hands, or the hands of others, led to valuable improvements. No one ever asked counsel of him in vain, whether it was the astronomer who wished to photograph the moon and the stars, or the humble beginner who desired to improve his tintype. All their questions were carefully considered and answered, and none were so well versed in photography but that they could gain some ideas from the results of his enthusiastic researches.

He was emphatically an earnest and straightforward man. He despised everything in the shape of sham or pretense. He took no pleasure in theatrical performances, as he could not dismiss from his mind the feeling that the actors were pretending to be what they were not.

In business matters he scanned the advertisements of the house carefully to make sure that they were so worded that misunderstandings could not occur.

He was a genial man, with a keen appreciation of everything humorous, and his conversational powers were of the highest order, and though he could fill any position to which he might be called, he never felt the slightest desire to push himself into prominence. His worth was best known to those who knew him best.

Please convey to the members of the Photographers' Association of America our high appreciation of the beautiful token of regard which accompanied your letter. We feel greatly honored in being the recipients of such an enduring tribute to the memory of one of the members of our house, and whose worth we shall always remember from years of personal association.

Very truly yours,
E. & H. T. Anthony & Co.

To Messrs. E. Decker, Charles E. Smith, and S. V. Courtney, *Committee.*

NEGATIVES FOR PHOTO-LITHOGRAPHY AND SURFACE BLOCK PRINTING.

BY MAX JAFEE.

Developer.

Water . . .	1000 grammes.
Sulphuric Acid . .	12 drops.
Protosulphate of Iron	40 grammes.
Alcohol (90 per cent.) .	25 grammes.

During development, the plate must be slowly and continually moved in such a way that the solution runs up to the extreme edges and corners; otherwise no even image is obtained.

Fixing.

Cyanide of potassium or hyposulphite of soda solution. After fixing, the plate must be thoroughly washed.

Intensifying.

A. Cold saturated solution of Bichloride of Mercury.

B. Cold saturated solution of Iodide of Potassium.

Solution B is slowly added, with continual stirring, to A, until the red precipitate which is first formed is re-dissolved. This mixture now appears clear and of pale yellow color. It may be diluted according to necessity, and can be preserved for repeated use. A slight muddiness shows that the negative was not sufficiently washed before fixing.

If the negative after fixing appears unequal in density, some places being weaker than others, this defect may be remedied by skilful manipulation in intensifying. Places of less intensity print more quickly, and, in consequence, lines and points come out broader than they do in the other more intense portions of the plate.

Blackening.

The following intensifier is not permanent in the light, and requires, therefore, further treatment, which we will merely call "blackening." If the intensity appears already sufficient (and it must be borne in mind that this intensity increases as the film dries), it suffices to pour over the film dilute ammonia; if, however, the negative requires further density, it is covered with a solution containing one part of sulphide of ammonium to four parts of water. In both cases care must be taken that the blackening of the film is carried through completely to the glass; this can be ascertained by examination through the back of the plate. The sulphide of ammonium solution must be kept well preserved in air-tight bottles, and used only so long as it appears of a light yellow. It is well for daily use to mix a small quantity with the specified amount of water. After treatment with the sulphide the plate shows a plentiful amount of green fog; this is removed by the application of a very dilute solution of hydrochloric acid, a few drops in 100 grammes of water. If the intensity is still insufficient, the intensifying may be repeated. When the negative is thoroughly washed it is flowed over with a ten to twelve per cent. solution of gum arabic. Varnishing is not necessary; if, however, this is done, it must be remembered that what intensity has been gained in drying will be lost again in varnishing. The latter effect may be avoided by flowing, before varnishing, with a ten per cent. solution of gelatine instead of gum. It is not recommended to allow the negative to dry, and then to re-wet and apply the intensifying solutions, as the bath does not in this case work so well, or take such an even hold. If there is not time to intensify immediately, the negative should be placed in a dish covered with water until it can be attended to.—*Lithographer and Printer.*

SOME FURTHER APPLICATIONS OF TRANSFEROTYPE.*

BY G. HANMER CROUGHTON,
Rochester, N. Y.

A very effective picture with very little work, can be obtained by the use of transferotype and plain glass, backed up by drawing paper, in the same way as by the old collodion transfer process, nearly twenty years ago; this may be one of the things that has become so old as to become practically new to another generation. The method of proceeding is as follows: Make your enlargement upon the transferotype paper in the usual way, with the enlarging camera, being careful to get your picture a little darker than is required for transferring upon opal your glass should be of the best quality, colorless and free from specks, the same size as the picture.

To prepare the glass for the transferotype, it should be well washed, first in acid water, then with water to which a little ammonia has been added, then rinse with fresh water under the tap; squegee the transferotype to the glass, and strip in the usual way with warm water; carefully remove any trace of the substratum and let dry; when thoroughly dry put into the retouching desk, and with the retouching pencil carefully fill up all the little breaks and inequalities in the face in the same manner as when retouching a negative.

Then with a soft black pencil BB deepen the pupils of the eyes, the line of the lash, all the shadows of the face, that may want strengthening and sharpening; in the hair, drapery, or any other part that may appear to want it; when the touching is finished the picture must be backed with a piece of Whatman's medium drawing paper. Place the paper in contact with your picture and you will be able to see where any corrections or additions may improve it; the drawing paper may be worked upon with crayon and stump to put in light and shade upon the background; this may be brought

* Written for Mosaics, 1889, but received too late.

over the outlines of the figure, and the lower part of the picture, but must not overlap the outlines of the head. This treatment will give you a picture that will have the appearance of a great deal of work, and at the same time preserve all the characteristics of the photograph, and will be much brighter than a picture on bromide paper, because of the picture being in actual contact with the glass, so giving greater depth and richness in the shadows; this treatment may be adapted to either vignette or solid pictures, but is far better for vignettes.

A very little work is needed on the drawing paper to get an effect of background, and it is best done with stump and crayons.

Another modification of this method is to back the picture with tinted and crayon paper instead of the white Whatman's paper; when this is done the high lights must be put upon the paper with white chalk, and the way to do that is to place the picture in the retouching frame, place your paper over it, and then mark in your high lights with the white chalk in the parts needed; there can be no difficulty in doing this, as the picture can be plainly seen through the drawing paper, therefore the touches can be put on, in exactly the right place; this will be on the forehead, down the nose, the whites of the eyes and white drapery; then the paper being placed behind the transferotype, these high lights come into their proper places and make a very effective looking picture. The background can be worked with the stump and crayon, much in the same manner as the white drapery; if needed, a little delicate tint of flesh color can be put upon the cheeks with the soft French pastel. This should be done very delicately, or it will have a common appearance.

About twenty years ago, a method of obtaining an effect in colors, was introduced into England by making one print transparent with Canada balsam, and roughly coloring another print from the same negative and placing it behind the semi-transparent print, but not in actual contact with it. The under print is colored roughly but very brilliantly, the color being softened and rendered very delicate by having to be seen through a semi-opaque print above it; while the upper print gave all the drawing and modelling of the photograph.

This effect can be obtained with the transferotype, without the disadvantage of using the messy Canada balsam, which always, sooner or later, becomes spotted and so spoils the picture.

To do this make two pictures exactly alike, vignettes preferable, squegee one of them to a piece of fine ground glass, and strip in the usual manner, being also careful that none of the substratum is left, When dry a little touching up is required upon this, which is to be the upper print, such as covering the whites of the eyes from the back with Chinese white, painting in the iris with the color needed—blue, brown, or any color that may match the original—and touching up in the same way, with the pencil, as described for the picture as above; now take your second picture and color very bright, strongly and roughly, paying very little attention to the details, but seeing that your colors are bright and strong. You can place it under the top print as you proceed in the work, and will then get an idea of how deep the color must be to show through the semi-transparent picture upon the ground glass; when finished the two pictures must be bound together, with a strip of cardboard between them, to keep them from actual contact.

Transferotypes upon plain glass can be used for the ivorytype process instead of the albumenized print, and the manipulator is thereby saved the trouble of scraping away the paper, and rendering it transparent, but it can be backed with the coloring material used in that process. Very good effects can be obtained also by having a fully-printed-out picture upon plain glass and backing with oil colors; very little skill is required for this work, as the photograph is seen above the color put behind it, and flat tints only are required, the photograph itself serving for the drawing, light, and shade.

These are hints that can be carried out to any extent by those who will experiment in this direction.

The lantern-slide exhibition of the Amateur Society of New York has been changed to November 30th.

NOTES ON THE HISTORY OF THE MAGIC LANTERN.

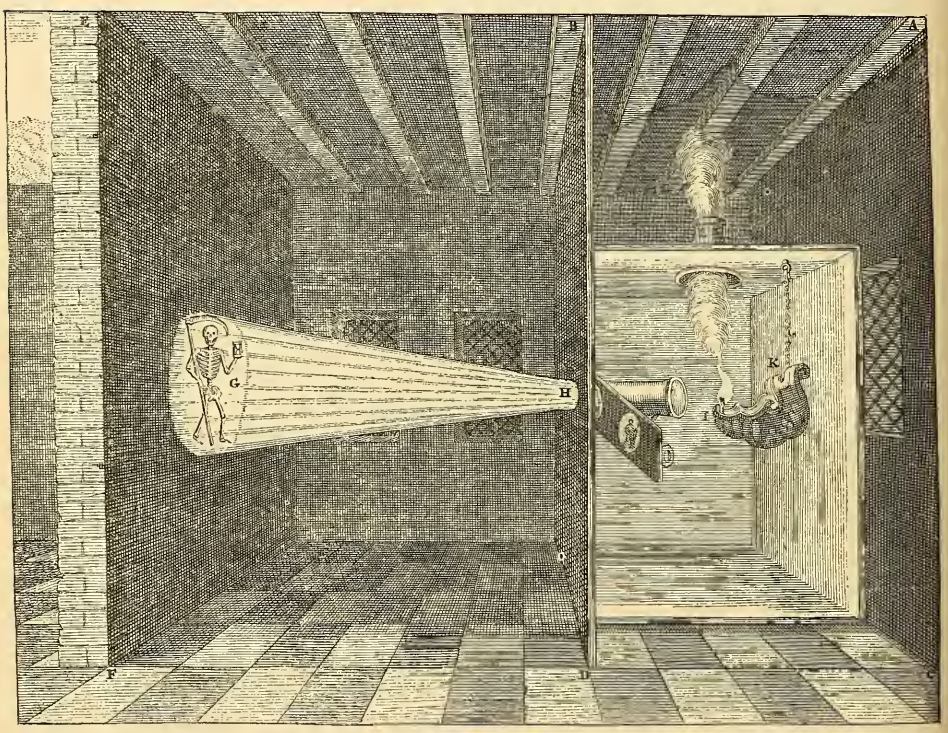
BY H. C. BOLTON, PH.D.

New York City.

THE "magic" lantern is an outgrowth of the *camera obscura*, the original of which is unknown. Its invention is usually attributed to John Baptist Porta, but Libri (*Histoirie des Sciences Mathématiques en Italia*, Paris, 1841, four volumes, octavo), has shown that it was frequently mentioned by authors of much earlier date.

The first mention of the camera obscura occurs in unpublished MMS. of the celebrated Italian painter, sculptor, and architect, Leonardo da Vinci. Da Vinci was born in 1452, and died in 1519. His reputation as an artist is immortal, but it is less generally known that he was well versed in music, military science, mechanics, hydraulics, astronomy, geometry, physics, natural history, and anatomy. In several of these branches he made original investigations, anticipating later philosophers.

In a MS. quoted by Libri, da Vinci proposed a theory of vision which he seeks to explain by reference to the camera obscura (*Libri*, iii. 54 and 233). This takes the invention back into the fifteenth century—say 1490. In a work published in 1521 by Cæsariano, a Milanese architect, he attributes the invention to a Benedictine monk, Dom Panunce, which is, however, regarded as doubtful (*Libri*, iv. 303).



Cardanus, an Italian physician, mathematician, and author, also mentions the camera obscura in a treatise entitled *De verum subtilitate*, published at Nuremberg in 1550.

All these references antedate John Baptist Porta's work, *De Magia Naturalis*, of which the first edition appeared in 1553, when its precocious author was only fifteen years of age. While Porta was not the inventor of the camera obscura in its simplest

form, he has the honor of first employing a convex lens to perfect the images, and of placing transparent drawings opposite the opening. To these drawings he attached movable parts and thus produced astonishing effects, which the unlearned ascribed to magic, a term connected with the lantern ever since.

Porta's camera obscura consisted of a simple box with a small opening at one side through which the rays of light entered and fell upon a white paper screen at the opposite side. The lens was subsequently inserted.

The difference between a dark chamber of this construction and a magic lantern is very slight, and consists chiefly in the relative position of parts and the source of illumination. By whom the great improvement was made, of substituting artificial light for sunlight in exhibiting transparent pictures, is unknown to the writer.

Deschales, in his *Mundus Mathematicus* (Leyden, 1674), states that a Dane, possibly the physician, Thomas Bartholin, showed him, in 1665, a lanterna magica having two convex lenses. (*Pogg. Gesch. Phys.*, p. 436.)

Athanasius Kircher, a learned Jesuit, Professor of Mathematics at the Collegio Romano (born 1602, died 1680), in his second edition of *Ars magna lucis et umbræ*, 1671, describes the magic lantern, and in his *Physiologia*, 1680, gives interesting engravings of methods of projection, one of which is reproduced above.

The oxyhydrogen light, now commonly used in connection with the exhibition of pictures by the lantern, was the invention of Thomas Drummond, of the Royal Engineers (born 1797, died 1840), who employed it, in 1824, in the trigonometrical survey of Ireland. The principle on which it is based had, however, been established in 1801, by Professor Robert Hare, of Philadelphia. To prevent explosions from the ignition of the mixed gases, Dr. Hare also applied the principle of Sir H. Davy's safety lamp, but this was not altogether satisfactory, for it did not prevent some disastrous explosions. Later the so-called "safety-jet" was introduced, consisting of concentric tubes which prevent the gases, oxygen and hydrogen, from mingling previous to their issuing from the orifice. This invention is variously ascribed to Hemming, Maugham, and Daniell. The publication of the latter is dated 1833.

TWO SAD ACCIDENTS FROM "FLASH" POWDERS; CAUTION.

There is an element in human nature which impels or tempts those who are afflicted with it to do things contrary to directions. For example, the average photographer would, in nine cases out of ten, prefer developing his plates according to his own ideas rather than follow the formula given by the expert manufacturers. This disposition has recently cost a life in one instance and the horrible maiming of another person engaged in the industrial department of photographic production in another instance. The paragraph from one of the Philadelphia papers and the letter from Mr. Partridge given below, will explain. These ought to be enough to convince our readers:

1. That many of the "flash-light" compounds sold should be handled with as much care as gunpowder, and, 2. That the compound prepared for the Hawkridge pistol is the only kind safe to use in it—and that it and all others should be used only "according to directions."

Coroner Ashbridge yesterday investigated the circumstances attending the death of John D. Cruice, aged sixteen years, who was fatally burned on Saturday by an explosion of photographers' "flash powder" at the chemical works of Wiley & Harris, 137 North Seventh street.

Charles Reindollar, who has charge of the laboratory and of all prescriptions made there, testified that he also had mixed the powder. On Saturday he instructed Cruice how to work the ingredients through the sieve, to pulverize them, and watched him for some time. After putting in the bichromate of potassium, the last ingredient used, the witness stated that he was called away. He had not been gone a minute before the explosion took place. There were about seven pounds of powder undergoing the process of mixture. The witness stated also

that he had experimented with the powder, and found that it would not explode by holding a lighted match to it, but if it was stirred at the same time combustion followed.

Joseph Wiley, senior member of the firm of Wiley & Harris, stated that he had been manufacturing the "flash powder" since January for Buchanan, Bromley & Co., dealers in photographers' supplies, No. 1030 Arch street. He handed the Coroner formulæ of the "violet" and "yellow" "flash powders," made by his firm. He testified that they would not explode by concussion, but would by friction. The sieve used by young Cruice was what is known as a twenty degree and was called a coarse one. By ordinary sifting the explosion could not have occurred. He thought that some substance must have become lodged in the meshes of the sieve, and, by the rubbing of particles over it, the powder was ignited by the friction which ensued. The witness did not think the powder dangerous, and had never considered it so. At the time of the accident the boy was mixing the "violet" powder. About a pound of the substance was exploded. Had the rest gone off at the same time, the witness continued, it would have blown the building up. Mr. Wiley made experiments with both powders in the presence of the jury, which resulted in them being ignited only by a lighted match.

W. P. Buchanan, of the firm of Buchanan, Bromley & Co., corroborated the preceding witness as to the liability of the powder to explosion. He stated that he arrived at the formulæ after about five hundred experiments, in none of which did an explosion occur. About a dozen firms are manufacturing the powder now in the United States.

The jury brought in a verdict of death from burns accidentally received, the Coroner telling the jury that it was evident that all care and precaution had been observed by the firm.—*Philadelphia Ledger.*

San Francisco, October 25, 1888.

Mr. Edward L. Wilson.

My dear Sir: I mail you a copy of this morning's *San Francisco Chronicle*, containing notes of an accident which occurred here yesterday. This report is more nearly correct than that in any of the other papers.

"Howard Lindsey, a sixteen-year old lad, experienced the folly of fooling with firearms of any description yesterday, by receiving fatal injuries in handling a flash-light pistol used by photographers in taking pictures at night. Lindsey worked for C. S. Partridge, a dealer in photographic supplies, and while working in Partridge's basement just before noon, found the pistol, which was lying with some goods recently arrived from the East. He was ignorant of its use and undertook to experiment with it. In a few moments a loud report was heard in the store up stairs, and when the clerks rushed down to see what had happened Lindsey was found covered with blood and with a large hole in his head.

"He was taken to the city receiving hospital, where his injuries were pronounced fatal by Dr. Buckley."

The facts are as follows:

Howard Linsley, aged eighteen, who has been with me about three years, was at work in the cellar, when he came across the Hawkridge pistol which I had brought from the East as a sample. Whether the powder that had been in it was exhausted or not, we do not know. He put eight charges of McCollin's "blitz pulver" into the cylinder, saturated the cotton with alcohol, lighted it, and attempted to flash it in the usual way by pressing the piston. An explosion followed, in which the cylinder containing the powder was shattered to fragments, a portion striking him in the forehead, making a hole, and I also understand it fractured the skull. Several of his fingers are badly maimed, so that he will, at least, lose the use of two or three of them.

I have called your attention to this, and have stated the facts exactly as they were, that you may, through your columns, caution your readers in regard to the matter. I would not have you in any way make statements to injure McCollin's flash powder, or the Hawkridge pistol, for I think each is good in its place, but the Hawkridge pistol must not be loaded with blitz pulver, any more than a shot-gun should be loaded with dynamite. We have since found by

experiment, that the powder furnished by Mr. John Clark will not explode when a match is touched to it. While, in this particular case, the boy should not have handled the flash pistol, the accident is one which would certainly happen to any one who should be so unfortunate as to try a very explosive powder in the pistol.

I have no objection to your mentioning my name in connection with this, but do not do so in a way that might *possibly* cause any unpleasant notoriety to the *pistol* or the *McCollin flash powder*.

Very truly yours,

SAM C. PARTRIDGE.

A NEW COPYRIGHT LAW.

THE purpose of this communication is to direct the attention of the representative photographers of the United States to a subject of much importance to them, and to elicit their opinions upon it. An early response, in the form of a signed answer to the questions I will provide, is requested.

Among the laws created by legislation for the protection of the property of individual citizens, there should be one somewhere adequate to the preservation of the rights of the photographer in his own work; but, as yet, none such exists. The general copyright laws, to which he can alone appeal, although, perhaps, sufficient for the needs of the art in its earlier days, are now utterly inadequate; because they entail upon the photographer who would avail himself of their protection an enormous and almost prohibitory amount of trouble and expense, since they demand that every photograph which it is desired to protect shall be *specially* and *individually* copyrighted; thus necessitating, *in each case*, the printing of the title of the subject of the picture, which must be sent to Washington, together with the copyright fee and two copies of the finished picture. When one considers the thousands of photographs which every prominent photographer of the present day would wish to protect—and to the protection of which, as the result of his study, labor, and artistic knowledge, he has an undeniable right—it becomes easily comprehensible that the present conditions, simple as they seem, when considered in reference to a single picture, become by multiplication an unbearable burden—a burden, indeed, so heavy that there is to-day *not one photographer in the land* who does not prefer to run the risk of having his pictures pirated to going through with the troublesome and costly details of copyrighting them.

Why should not the law provide a feasible method for copyrighting *all* the pictures he makes, if he so desires?

As has been already stated, the *individual* copyrighting of his thousands of pictures is practically an impossibility; but why should not the photographer, by an amendment to the present copyright laws, be enabled to guard all his work from the infringer by the payment of an *annual copyright fee*.

It is not proposed that the present copyright law shall be done away with; the photographer who desires only occasionally, and at long intervals, to copyright an individual picture, would still have the right by the present method to do so; it is only intended, by the proposed amendment, that the man who wishes to avail himself of the privilege, shall also have a feasible method of protecting *all* his productions. The payment of his annual fee should bestow upon the photographer the right to print upon all his mounts the notice of copyright.

By correspondence with the Librarian of Congress, it has been ascertained that the total amount received by the government last year from photographic copyright fees was only $3000. Were the *annual fee* proposed above adopted, though it were made only $100, there is little doubt that *many times* $3000 would accrue to the government from this source alone; and there is certainly no photographer, at all prominent in the profession, who would not gladly pay that amount—or, if necessary, even several times that amount—to secure to himself the full benefits of his labors.

As a moral consideration, it might be added that our piratical friends would by this means be legally forced into honest courses; and, as a business consideration growing out of that, it might be further suggested, that they would eventually find themselves the better off for it. For, when

a lithographer or other copyist saw a picture which he considered worth reproducing, he would purchase from its originator the right of such reproduction; and having thus become sole owner of that right in that picture, he would be able to insure his customers against rival imitations and thus receive a better price for his work.

Much more might be said, and of importance; but it is probable that enough has been suggested to convince the members of our profession of the pressing necessity for some reform in this matter.

Please write me for slip and full circular.

B. J. FALK,
949 Broadway, New York.

DOTLETS FROM MY CALENDAR.

BY AUNT DOTTIE.

"THE manner of saying or doing anything goes a great way towards the value of the thing itself."—*Seneca.*

Especially the doing. And the photographer who gives the most care to his doing produces the best work and works up the best purse.

"There is time enough for everything in the day, if you do but one thing at once."—*Chesterfield.*

Which meaneth: A, do first what *must* be done; and, B, a place for everything and everything (neatly) in its place.

"That which we acquire with most difficulty, we retain the longest."—*Colton.*

Ahem! That's so.

"Deliberate with caution, but act with decision; and yield with graciousness, or oppose with firmness."—*Colton.*

Colton *must* have had experience in the dark-room. No negative student will fail to understand his meaning here.

"Your active exertions are due, not only to society, but in humble gratitude to the Being who made you a member of it, with powers to serve yourself and others."—*Sir W. Scott.*

Consequently, it behooves every photographer to do all in his power to elevate his art. If he does, he will himself be elevated; he will benefit society and honor his Maker.

"The end of man is an action and not a thought, though it were the noblest."—*Carlyle.*

Therefore, no matter how much you may think a magazine will help you grow, you are derelict unless you subscribe for 1889 soon.

PRACTICAL POINTS FROM THE STUDIOS.

TONING BATH FOR ALBUMEN PRINTS.—At the September meeting of the Society D'Etudes Photographiques, Paris, Mr. Ginestat showed some albumen prints toned in the following bath:

Chlorhydric Acid .	1 to 3 grammes.
Water . . .	100 "

Leave the prints in it from four to fifty seconds, so as not to injure the paper. Fix in the ordinary way. The positives treated in this manner, without gold, have a very warm violet-black tint, which was much admired. As is seen, we here avoid the annoyance of ordinary baths, which do not work well at the time of using them; and economize time and money. Mr. Ginestat adds that acetic acid may be used for the same purpose.—*Moniteur.*

PLATINA PRINTS WITH A BROWN TONE.—M. Taeschler-Signer, of Basle, gives the following process for obtaining platina prints having a *brown tone.* Here is his formula for the developer:

A. Oxalate of Potash . .	300 parts.
Water	1000 "

Heated from 158° to 176° F., then add

B. Bichloride of Mercury .	5 parts.
Water	100 "

By varying the quantity of the bichloride it is possible to obtain all the tones between gray-black and sepia.—*Phot. Mittheil.*

IN these days of earnest seeking after "the pictorial effect in photography," there is no scarcity of helps to the cultivation of the faculty of artistic sight. Mr. Robinson's own works are invaluable in this line, and

in our own country Dr. Edward L. Wilson has put within the reach of every one the famous *Art Essays* of John Burnet. This handsome work, a photo-lithographic reproduction of the now scarce original, with its treasury of examples of composition, light and shade, etc., has already been cordially welcomed by art students and artists in every grade, but it is pleasant to think that it is to photography that we are indebted for its reproduction, and that it was prepared primarily by a photographer with a view to the encouragement of art study among those who seek to elevate photography to its proper place among the arts. All such books, therefore, are welcome additions to the growing photographic literature of the day —*Philadelphia Ledger.*

On the Toxic Properties of Bichromate of Potash.—In Canada, certain doctors have recently again called attention to the toxic properties of bichromate of potash, a salt which is daily in the hands of photographers. Drs. Ruttan and Lafleur report the death of a young man of twenty-five, who had swallowed a certain quantity of a solution of the salt in question. The authors conclude, from the appearance presented at the autopsy, that bichromate of potash is not only an irritant poison, but it also acts as an oxydizer of the fluids and tissues, and that about two drachms are sufficient to cause death.—Dr. Phipson, *in the Moniteur.*

Phosphorescence of Prints after Development. — The German journals publish an article of Messrs. Lénard and Wolf on the phosphorescence of pyrogallic acid, which has been reproduced in the journal of our Chemical Society. The authors have remarked that when a photographic plate has been developed with potash or soda, after having previously been washed with a solution of alum, it becomes distinctly luminous in obscurity, and the phosphorescence lasts for about two minutes. It appears that Mr. Eder remarked some some time ago something similar, and we have mentioned cases of the phosphorescence of gelatine emulsions observed by some English photographers who had prepared them during the night. In the present case, the authors are of the opinion that the emission of light is due (according to their own expressions) "to the condensation of the oxygen and of the pyrogallol on the recently precipitated aluminum;" in other words, to the rapid oxydation of the pyrogallic acid, aided by the presence of aluminial. That there is oxydation seems evident, for the presence of sulphide of soda prevents, in a great measure, the production of light; nevertheless, it may then be made to appear faintly by saturating the potassic pyrogallol with oxygen and afterward adding a solution of alum.—Dr. Phipson, *in the Moniteur.*

A New Process for the Rapid Evaporation of Non-inflammable Liquids. —A new lamp specially manufactured for the rapid evaporation of any non-inflammable liquids, is described in several of our journals of chemistry. In this lamp the flame is placed at the surface of the liquid to be evaporated, instead of being under the capsule. It results from this that the capsule may be of any nature, even wood or ebonite. This capsule is placed in a large glass cylinder, immediately under the flame of a circular gas burner, and may be raised or lowered by means of a screw on the supporting stand. It is asserted that if the flame of the gas is at some distance from the liquid, it imparts sulphuric acid to the evaporated liquid; but if it touches the liquid, this last absorbs no sulphuric acid.—Dr. Phipson, *in the Moniteur.*

[*Translated for The Philadelphia Photographer.*]

DEVELOPING AND WASHING PLATINOTYPES.

BY M. DAVANNE.

The developing bath consists of a solution of neutral oxalate of potash, made slightly acid by a little oxalic acid; the liquid is filtered into a porcelain or enamelled dish, which is placed in a second vessel, so as to form a water bath. Heat until a thermometer placed in the oxalate of potash indicates a temperature of about 177° Fahr. If the prints be overexposed, lower the temperature; if, on the contrary, the exposure

has been too short, raise the temperature to about 212° Fahr. Now taking a print by two corners, immerse it completely, and pass it slowly through the developing bath without losing hold, raise it, and the image is developed. If some portions have not been wet, which would give rise to white spots, make a second immersion. This operation is to be repeated for each print, modifying the temperature of the bath according to the time of exposure. M. Chalot meets with perfect success in using this developer cold. The image plunged in the bath comes up slowly, and is withdrawn at the proper time. The developer is kept in a bottle, and may be used indefinitely. It is even better after repeated use, doubtless, because a small quantity of the sensitizing mixture is dissolved in it. When crystals are formed, owing to the evaporation of the liquid, add the quantity necessary to dissolve them; if the volume is no longer sufficient, complete it by the addition of some new solution of the oxalate of potash. The paper of the prints is impregnated with the salts of iron and platinum in excess, which give it a disagreeable color; it is restored to its original whiteness by plunging all the sheets together in an acid bath, composed of the following proportions:

Chlorhydric Acid .	10 to 15 cc. (3 to 4 fl. drs.).
Water . . .	1000 grammes (34 fl. ozs.).

Renew this bath two or three times, until the paper has lost all its yellow color, then rinse in pure water, several times renewed, until the complete disappearance of all traces of acid, which it is easy to prove by the use of litmus-paper. It is not advisable to add to the washing water any alkaline reagent (carbonate of soda or of potash, ammonia, etc.); for should any chloride of iron still remain in the paper, it would be precipitated in the pulp in the state of carbonate or oxide of ochreous iron. It is only necessary to multiply the washings sufficiently to be sure that the acid reaction has disappeared, and no longer threatens in time to alter the fibre itself of the paper which it would by transforming it into hydro-cellulose. The general color of platinotypes greatly resembles the tone of an engraving; the illusion will be still heightened if they are struck on India paper, then on coarse, thick paper, and giving by burnishing the appearance of a print struck off in the press. —*Journal de l'Industrie Photographique.*

THE WORLD'S PHOTOGRAPHY FOCUSSED.

Photographic Teaching in Vienna.—More than one hundred scholars attended the summer session of the Imperial and Royal School of Photography, directed by Dr. J. M. Eder. These pupils represented all classes. Photographers, lithographers, phototypists, artists, met together at the lessons of Dr. Eder and of his corps of professors. An expedition about to leave for Asia and the Canary Islands, assisted at the different courses before undertaking the exploration of these distant countries.—*Bulletin Belge.*

[*Translated for The Philadelphia Photographer.*]

ON THE USE OF SULPHITE OF SODA IN PHOTOGRAPHY.*

BY PAUL POIRE.

In the development of the photographic image obtained by the gelatino-bromide of silver plates, the use of carbonate of soda, in presence of pyregallic acid, presents serious objections, especially for plates having received an insufficient action of light, either by a faulty exposure (instantanieties), or by the use of a very small diaphragm intended to increase the sharpness of the image. It is then necessary to prolong the action of the developing bath, and we gradually see appear that uniform and grayish tint which veils the details of the image. Moreover, the cliché becomes *pasty*. The veil seems to be caused by the prolonged action of the carbonate of soda, which modifies the grains of bromides in the whites as well as in the blacks of the cliché. What has confirmed me in this opinion is that many times I developed a veil upon plates that had not been exposed to the light. Since a long time, I avoided this trouble by increasing the quantity of sulphite and of carbonate,

* Paper read at the October meeting of the French Academy of Sciences.

which allowed a reduction of the time that the plate remains in the developing bath. The image then appears much more quickly, rapidly acquires intensity, and the veil has not time to form. A decisive experiment was made by developing two identical prints by the two methods. Prolonged experiments have proved conclusively that the results are the more satisfying as we increase the proportion of sulphite and diminish that of the carbonate, until the entire suppression of this last. These results have been confirmed by Messrs. Thierrée and Obry.

Here is the composition of the bath that we use:

Solution of Sulphite of Soda, at 25 per cent. . . . 100 c.c.
Pyrogallic Acid, solid and dissolved in the Sulphite . 1 to 1.5 gramme.

The plate is immersed in the bath, the image appears in at least from two to three minutes, gradually acquires its intensity, and without being fogged by the prolonged contact of the bath. If the solution of sulphite has been made with rain or distilled water, the plates are not colored, even if they have not been alumned. The clichés obtained by this process are of great purity, and resemble clichés obtained with sulphate of iron. Their transparence doubtless arises from the fact that the brown coloring matter, due to the action of pyrogallic acid on the soda, is soluble in the sulphite. The same bath may serve to develop several plates. I have been able to use baths made twenty-four hours before. The advantage of the process that I have just described is the avoidance of the fog produced by the prolonged action of the carbonate; plates have remained forty-five minutes in the bath, continually gaining in intensity, but without showing the least appearance of fog. Are these results due to the action of pyrogallic acid on the sulphite, which would become a reducing and developing agent, or to that of the acid on the carbonate, which sulphites sold as pure often contain? Here is a point to be determined.

Messrs. Wilson-Hood-Cheyney-Co., 910 Arch St., Philadelphia, Pa., have issued a bargain list, to an examination of which we commend buyers.

A CHRISTMAS CAMERA STORY.

BY A. LEE SNELLING.

"That woman is the most frivolous creature that breathes! See her now, trapezing about with that camera of hers, and those two boys at her heels. And remember, my dear, they are *her'n*, and she a married woman. I declare, with that flannel suit, and that hat, a regular boy's hat, she looks a holy show. If I was her husband, I'd soon put a stop to such nonsence, I tell you."

The speaker, a true Jersey housewife, stuck her needle into the stocking she was darning, with a savage thrust, as if she were piercing the offending party to the heart. The unconscious offender was a show, if that means a pretty thing to see, for under the Tam O'Shanter's blue rim, a fair face, with merry blue eyes, was laughing out, while over one shoulder the long feet of the obnoxious camera was sticking out for a yard or so in front of the blue flannel blouse, while a pair of feet in pretty little neat boots were also making a "show of themselves" from under the skirt.

"Now, boys, face the dragon, for there she is on the porch, with a crony. Harry, keep the plate-holders well wrapped up in the focussing cloth, the sun is so hot."

"Ah, good morning, Mrs. Tattle; lovely day, isn't it?"

Mrs. Tattle responded by a jerk of the head, and took in the entire party with a look of withering scorn.

"Air you off fer the day agin, pictur takin?"

"Not quite for the day, but the boys and I are good pedestrians, and we are going to get some views of the Orange Mountains."

"Air you goin to put up eny fruit? If you air you'd better take to-day to doin it, as I hearn they is going to riz."

"Put up fruit this lovely day, oh, dear, no! It is too warm for that, and then, too, you know I'm not a very good cook, and that treasure of ours, Mary, always does the preserving."

"What! you let your hired girl do that; well, I *de*clare; I suppose she just wastes the sugar."

The camera had been settled on its feet for the inevitable lecture the dragon was ex-

pected to give, and its bright little owner was standing beside it in the prettiest attitude imaginable, with unconcealed laughter shining in her eyes, while the two boys, one armed with drop-shutter, the other with the plate-holders, were showing every sign of impatience at the delay, and glancing at the dragon with fight in their bright brown eyes.

"Papa says mamma is not his cook, and he is as proud as Punch of her pictures, and he likes her to keep young and happy, and know how to talk about something beside putting up fruit or making soft-soap, for he says so."

The little champion, with clenched fists and flashing eyes, looked ready to annihilate the dragon on the spot, while his younger brother, a chubby, lazy, little fellow of six, said, encouragingly in a stage-whisper:

"Go for her, Fred, I'll bet on you."

The mother smiled merrily, but said, approvingly, "For shame, Fred, to speak so rudely. No, Mrs. Tattle, I'm not afraid of the sugar, but I am afraid we will never reach our destination if we don't start. Come, boys, we will have to make tracks if we want any shutter views this morning." And shouldering the camera and tripod, with a bright little nod, followed by her attendant satellites, Mrs. B. marched off.

"Did you hear her slang, Mrs. Smith? Why, ef my Sam, now near thirteen, was to say sech a thing, I'der most die of shame. I tell yer that woman hasn't got one grain o' sense, and them boys is the sassiest brats I know, and air ready to pick your eyes out if you look at their mother. I tell yer I'd like to see inter their house, I'll bet I could find a deal ter see; with her flying about the country every fine day, and a sittin in her winder a paintin and a mussin every other time. They says that her husban is jest a startin out for himself, and I recken he'll jest bust up some day, for that woman hain't washed a winder nor took a broom in her hand since I seen her."

Mrs. Tattle had become warm, and her pale blue eyes snapped, and her little knot of iron-gray hair, of as faded a hue as the eyes, nodded assent as she went into a long dissertation on the frivolities of the family opposite to her sympathetic listener.

Mrs. B. with a light step, and her boys, were tramping up the long avenue that takes Newarkers into Orange. The smile had faded, and a rather serious expression was about the childlike mouth. No one to see the trio would dream the fair, bright girl the mother of the two sturdy boys, but so it was, for when a happy, frisky, little school girl of seventeen, she had married Mr. B., who was only four or five years older than herself, and at twenty-six she still looked, and, better still, *felt*, a girl.

"Mamma what makes you so quiet? don't let that old beast make you feel bad," said chubby Harry, while for the moment his feelings chased away his merry dimples, and he came close to his mother's side, with a wistful look of troubled love in his face.

"Nonsense, Harry, I was not thinking of her," but the serious look belied the words. "I wonder why these Jersey women are so shocked at my 'picture takin,' as they call it, surely it does not hurt them, and it certainly is an annoyance to be taken to task when it is none of their business;" and the little woman looked quite fierce for a moment, until her quick eye caught sight of a most picturesque group of cattle.

"There, boys, just the thing. Now I can finish my landscape, for I shall get a study of these cows, and can get the picture off this week."

The camera was put up into position, the focus taken, the plate adjusted, and shutter touched off, and that group of cows was for the future just there.

The painting was finished, and a crisp new twenty dollar bill was soon snugly hid in a neat little box with many others in Mrs. B.'s bedroom, all made by the help of the despised camera. The little home contained many pretty little bits of color, and a soft bromide of some especially happy shot, looked down from the wall, while every thing showed the artistic touch of feminine taste. The windows, too, were as clean as one could desire, for the Mary, not being perpetually looked after, took a pride in her work. The little home was full of something better than plain cleanliness, it breathed a soft bright tone of harmoniously blended color, with the tranquil breath of refinement that a woman of taste unconsciously

scatters about her, as grateful to the senses as the delicious aroma diffused by a sweet-scented flower.

Across the street, how different things looked. How hard and unimpressionable the haircloth sofa, with its canvas tidy, worked in red worsted, how the impossible roses grinned at you, shrieking out, "I am in cross-stitch," which any one, short of being stone blind, could see. The motto, in perforated cardboard, with "God Bless Our Home," above the door, was faded until it was a real ghost of itself, but its lack of color was forgotten by the flash of lightning that struck one's eyes when they encountered the brand new chromos, with their chrome green and yellows. The poor dog in the one called "Can't you talk?" looked as if he would a tale unfold if he could, and he evidently on his own person carried a tube each of yellow ochre and burnt sienna.

Poor little Mrs. B., when forced to return her neighbor's first call, had felt each article in this room strike terror to her inmost heart, it all spoke so plainly of being the property of the dragon, as those boys of hers had styled Mrs. Tattle. There, too, in the corner, stood the glass enclosing Beckie's paper flowers, which Mrs. Tattle allowed "was somethin worth talkin about," and over the sofa was a bright paper plaque of Mrs. Cleveland, that Mrs. T. had received with a pound of tea. There was the clock on the mantel Mrs. T. had received from her mother as a wedding present, carefully kept covered by its bell glass shade, and unwound, for "what is the use of warin it out for company ter see, when ther peep-o'day in ther kitchin's good enough fer me," Mrs. Tattle often declared. The carpet did not "blush unseen," but was the first thing in the room to say, "how de do?" when the door was opened, which it said in the loudest way imaginable, with its bright blue flowers, with the greenest of green leaves in the brown-red ground. How Mrs. B. had laughed at the dew-drop on the third blue flower in each huge bunch, and at the ribbon that tied the methodical bouquet; but the two dozen or so photographs about the room, all framed, on mantel, table, and wall, were irresistible. They said: "We are cheap John's famous club pictures." Mrs. B. would have known it anywhere. See Beckie's hands how they are plastered one on the table beside her, the other out of focus and of Brobdignagian proportions on her rustic-looking husband's shoulder. See Mrs. Tattle herself, and that John's retoucher must have forgotten her, for there is the little red wart on her nose, and the tuft of hair nature has so unkindly allowed to grow on the side of her chin; but Mr. T. has not been forgotten, for every line in his careworn face is quite lacking, and it looks more like a putty man than anything else, as no one could live with such a shaped head. In the olive plush frame is little Ida, so pretty a little girl even John's poor work has been impossible to spoil her. Her feet are truly monstrous, of real Jersey and Chicago proportions, but that is because they are away out in front; and one wishes they could see the original without the "fixing up to be took," that has plastered the sunny curls, and made a caricature of the little childish figure, with a huge old-fashioned home-made lace collar and a big gold cross strung on a ribbon about the little neck.

To-day there is something wrong, for Mrs. Tattle hasn't been seen sweeping the sidewalk, and the whole house bespeaks trouble of some kind. The bed-clothes are not out of the window airing, and the place looks forsaken. Suddenly Mr. Tattle comes out, shutting the door with nervous haste, but safely behind him; he goes across the street, and soon is back again, with Mrs. B. accompanying him; she goes in, while he, with careworn face, goes off to his work. Poor Mrs. Tattle, her busy tongue is quiet now, save to try to whisper something tender to the little Ida who, with languid eyes, lies pale and wan in her little bed up stairs. Mrs. B. comes softly in, and the child greets her with a wan smile, more touching than tears. She talks soothingly to the little sufferer, and sings a little song of soothing melody, until the tired eyes are closed, and the child is asleep. Hot tears of regret are in the mother's eyes, for that very song has roused her ire many a time when she has heard it sung by a happy voice opposite, and sneered at "eny woman who can caterwaul, and daub, insted of makin the beds."

Little Ida has been very sick, but is a little better now, and can play in a sort of languid

way, very pitiful to see. The child loves the visits of the bright little "camera lady," as she calls her, and one bright morning Mrs. B. brings over the camera, and takes a picture of the little child in her mother's big rocking chair, nursing her little gray kitten. The pleasure and novelty of sitting at home and having her picture taken, pleases the little girl, and she smiles because "ther ain't no man to put tongs" to her head. The arms caressingly hold the baby kitten, the rumpled curls of golden hair catch the reflected sunlight that comes beaming in, the wan, tired little face, looks bright and round again, and the little figure, in its tiny pinafore, snugly ensconced in the old rocker, is a perfect picture of childish innocence and peace.

That was a whole summer ago. The little kitten is a full grown cat, but no little arms are there to hold and caress it. The house across the street has lost its only ray of sunshine; it is colder, darker, cleaner, and stiffer than before, for no little pattering feet are there, and the golden curls, like the sunshine, have gone forever. The little pinafore is folded away, and the old cat is untamed and wild. The mother goes about as usual with her rounds of household work, but one treasure, that no gold could buy, soothes her aching heart—that last picture of her lost darling, with her kitten, taken by the despised "camerer."

FACTS AND FANCIES.

Application of Stereoscopic Photography to Geology, Mineralogy, and Anatomy.—It results from some experiments made by Mr. Clipton and others, that it is only by the use of stereoscopic prints that it is possible to represent correctly the character of geological strata, mountains, minerals, plans, etc. The stereoscope will prove of immense resource for the student of the future, by giving him an exact idea of the structure of the terrestrial crust, without forcing him to travel and to study this structure in the localities themselves. There are other sciences, especially the anatomy of plants and animals, which will doubtless find many advantages in the application of stereoscopic photography. In a short time we may hope to see the stereoscope applied to geology and anatomy, with as much success as when it was formerly used in architectural work.—Dr. Phipson, *in the Moniteur.*

The Green Veil and the Way to Get Rid of It.—At the London Photographic Association Mr. Wollaston showed the result of an experiment made with a plate that had remained for a fortnight in the cliché, which consequently would give rise to a green veil during development, and this, in reality, was what took place. It is possible to remove this veil by well washing the plate after exposure and before developing rubbing the surface with the finger during washing and afterward making use of a very weak developer; a half of this plate had been developed with the normal developer, pyrogallic acid and ammonia, and had given a green veil. It was seen, however, that this last existed only on the surface of the film, and that it was easily removed by rubbing with the finger. It seems, therefore, that the green veil is of little consequence and only affects the surface of the sensitive film.—Dr. Phipson, *in the Moniteur.*

Instantaneous photography at night, by artificial light, is now much practised, and not alone by amateurs. Magnesium, in some form or other, has been the principal source used, and numerous methods have been proposed to light the powder. A new product has come up far superior to any of its competitors, namely, the flash furnished by nitrous gas; it gives rise to neither smell nor smoke.—*Moniteur.*

Much attention is being paid to photography without an objective; it seems destined to be useful in the arts and sciences.—*Moniteur.*

Hydroquinone Developer.—Mr. Paul Baltin, of Potsdam, prepared the hydroquinone developer as follows: To 900 grammes of water he adds 5 grammes of hydroquinone, which he dissolves by agigating; he then adds 40 grammes of sulphite of soda, and, after solution, 75 grammes of potash. This developer may be kept for a long time perfectly clear; it contains but

one-half of one per cent. of hydroquinone, and acts with more energy than the oxalate with the previous bath; it is also less costly. —*Phot. Mittheil.*

Phosphorescence of Cliché in the Alum Bath.—Messrs. P. H. Lénard and Max Wolff, of Heidelberg, have made experiments on the phosphorescence of clichés in the alum bath; they found that this phosphorescence was due to the addition of a solution of alum to the pyro developer:

Water	100
Potash	4
Sulphite of Soda . . .	0.75
Pyro	0.1

The authors think that this phosphorescence is sometimes the cause of fogging.—*Phot. Mittheil.*

Lighting Apparatus of M. Schrm for Burning Magnesium.—This apparatus consists essentially of two or more Bunsen gas burners, or alcohol lamps, which can be raised or lowered on appropriate supports, and into the flame of which magnesium powder is blown. The supports are furnished with reflectors and moderators made of tissue-paper. The same caoutchouc ball serves to blow the magnesium powder in the lamps by the aid of a bifurcated caoutchouc tube, and in this manner the flashes are produced simultaneously. For a portrait, two or three lamps are used, one or two for the lighted side, and the other for the side in the shadow. In making a group a greater number of lamps is used. This apparatus is remarkable from the fact that it consumes but very little magnesium (77 grains being sufficient for a portrait), and that it gives out no smoke; in the case of a portrait, the best effects are obtained by placing the lamp, or the lamps, of the lighted side, at the distance of from three to four and a half feet, and about one foot and a half above the head, and the other lamp at the distance of about six feet. The apparatus is constructed by J. Meyer, of Breslau, and costs about nine dollars.

OPEN CORNER.

Mr. Emil Frey, Corsicana, Texas, sends us the following blank order sheet, which we reproduce for the benefit of those of our readers who sometimes stumble over the best methods of conducting their business with their patrons. We believe system to be a good thing in photography, and thank Mr. Frey for his thoughtfulness.

Special Notice.—The negative from which the enclosed photos were printed will be preserved for a reasonable length of time. I should be pleased to furnish you *additional* copies at the following low rates: Six copies, cabinet size, for $2; one copy, cabinet size, for 35 cents; six copies, card size, for $1; one copy, card size, for 25 cents.

Order soon, as accidents will occasionally happen in a photograph gallery. Your negative may happen to be broken or damaged otherwise.

Respectfully,
Emil Frey,
The Photographer.
102 Beaton St, Corsicana, Texas.

Note: Make your remittance by money order, postal note, or registered letter. Never send money in letter.

ORDER SHEET.

....188...

Mr. E. Frey:
Corsicana, Texas:

Enclosed find $..... Please send me at your earliest convenience.....Copies.....Size, from Negative No. 14,529.

Name..... .....
Post Office.....
County .....
State.....
Remarks: ....
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....
.....

Mr. A. J. Whalen, North Adams, Mich., breaks the ice for the new year by sending us his order for our publications and other magazines at club rates, and says he cannot wait until the new year comes to do this; it is due to himself and others. He says, moreover, "This is quite a sum for an humble photographer to invest in books, but I believe it pays in a money point of view, and certainly in every other sense. No one in the business can afford to be without at least one good photographic journal; you see I send for three. My son will soon

enter the business with me, and I shall know better how to start him on the right track, and supply him with all the literature of the profession I possibly can."

This kind of open corners we like to see filled up. It behooves everybody to see them closed promptly.

The Right Way to do It.—One of our subscribers in sending us an article for *Mosaics* says, "I do this because of the help I have received myself from one and another during the past year through your magazine. I think if we would all help each other a little, we should all get along better. Let us cling together." This is a good sentiment.

In our last issue we cautioned our readers against the use of cheap and necessarily bad cardboard. Since then we have read in one of our English contemporaries the summing in the case where adulterated mounts were used, and we learn that one of the jurors happening to be an expert papermaker, explained to his fellow-jurors the tricks that were practised by papermakers; among others, one where a certain ingredient was used to give body and whiteness to the material, but which was of such a chemical nature as to be sure to destroy any photograph that was mounted upon it.

Mr. Frank Robbins, Bradford, Pa., contributes an article for *Mosaics* this year, and supplements it by an interesting personal letter. Among other things he says, "I see by the magazines that Mr. Thomas Pray, Jr., recommends the use of dry pyro at last. I am the first dry-plate worker, I believe, to introduce it in this connection. I enclose you a circular, to prove it, which was printed four and a half years ago, and we have all used it dry ever since. I have also used a little alum in my fixing bath for five years. I can show thousands of negatives of all sizes to 20x24 thus treated without a particle of yellow or fading. If your readers will pour in alum solution until the white precipitate begins to form just a trifle, the negatives will fix quickly and be free from "patchiness," indicating the use of too much alum, and the negatives will come out a rich strong color without the inconvenience of keeping up an alum solution in a separate pan."

The circular to which Mr. Robbins alludes says, "To develop a 5x8 plate, take two ounces of this soda solution and a mustard-spoonful of dry pyro, which is about seven grains. It dissolves instantly, making a fresh developer always of uniform strength. The soda solution alluded to is

Water	48 ozs.
Sulphite of Soda (granular) .	2 "
Carbonate of Soda (crystals) .	2 "

One of our subscribers sends us the worst looking print we have seen for a long time, of a yellow color, the surface all gone, streaks of some nature or other running vertically over the print, and on the back the following: "This illustrates beautifully the value of albumen prints; give me bromide every time." We do not think, however, that he has given the albumen print a fair, intelligent chance, whatever pains he may think he has taken.

SOMETHING ABOUT STORING NEGATIVES.*

BY E. FREY,
Corsicana, Texas.

"Old" will very likely be the first word you utter, after reading the above caption, and perhaps you are right; but, since nearly every man has his own peculiar way of working, the following may prove of advantage to those who, like the writer, are doing a considerable business in duplicate photos, and may assist them to get something of a *system* into the minor details of their business.

The majority of photographers are accustomed to *stack* their negatives; others put them in envelopes, which latter plan has not many advantages over the former, as in either case you are compelled to handle each negative until you find the one wanted. When an order for duplicates comes in, your printer has often to hunt over hundreds

*Written for Photographic Mosaics, 1889, but received too late.

of negatives before the right one is found, entailing a loss of time and good temper.

I employ the following method, and have no cause to change it, unless I find something still better.

I utilize the empty dry-plate boxes. A strip of white paper is pasted on either the long or short end of the box, the box to be placed *on end* on the shelf, the strip of paper toward you The numbering is done as follows: I ordered from a rubber-stamp factory ten stamps, each bearing one figure, from 1 to 0. These figures are mounted on narrow sticks just large enough to accommodate the figure, and the sticks are about one and half inches in length. When printing, boxes of different sizes, and fitted with the strip as above stated, are placed on or near your printing-table, and as soon as a negative is printed it is placed in a box of its size. The stamp is then picked up, and the number is *printed* on the strip of paper. The whole operation (if your stamps are lying in regular order in a small, flat cigar-box, partitioned off so as to keep each number to itself) will not consume more than a few seconds. In connection with the above, I wish to state that I number all my negatives *before* they are exposed.

The box, when filled, will present an appearance somewhat like this:

4523
24
25
26
27

downward, using the thousand and hundred figures but once at the head. I can step to my negative shelves, and find any negative made within the last three years in less time than it takes me to write this sentence.

Those who do not care so much for a neat appearance, or do not wish to take the time to paste on the white strips, may print directly on the box. The figures I use are about half an inch in length, but should be a little smaller. The whole set, if I remember correctly, cost me 75 cents.

Some will say, "It takes too long to do all this." I can assure you that it does not take one-tenth the time to do the numbering as does the *hunting* of a neg. The best way to find out—try it.

A QUARTER-DOLLAR SIPHON.*

BY W. W. DRAKE,
Union, Iowa.

In answer to the call, I send my mite, trusting it will save some one in time, pocket, and patience, of which we lose plenty when trying to empty a silver bath, and part of it, by a sudden twist, goes on the floor, against our inclination or desire. A siphon, made out of rubber tubing, such as you find in the nursing-bottles in the drugstores, fills the bill, and three feet of it will cost about twenty-five cents; one end is placed in the bath, and the other end taken between the thumb and finger of the right hand, and stripped about five or six inches, and then quickly placed in the bottle, into which the liquid will flow, caused by the air being taken out during the stripping. Thus the bath fills its place until the dish is empty. Now take the rubber siphon, and lay it on a piece of blotting-paper, to take up what silver is on the outside, and then hang it on a nail or peg until it is wanted.

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

For Professionals and Amateurs.

BY THOS. PRAY, JR.
Boston.

(Continued from page 627.)

Passing, for the moment, from the subject in regular order, my wish is to discuss to some extent the influence of the stop upon the photographic image; by this is intended to notice the size of the stop, or the size of the hole in the stop, and the changes wrought, the points of observance, what to do, and what not to do, as well.

The tables of exposure, proportion of stop, and much other frequently published information(?) is only relative, at best. Light is *not* a constant quantity, and the proportion of stop to focus of lens is quite as inconstant as the light. Then plates and other incidentals are again not at all constant; hence,

* Written for Photographic Mosaics, 1889, but received too late.

whoever uses a lens can only find out with what particular stop they can produce the best results in *all* points, and then work from that changeable and even empirical formula. The simple rule of a stop for a portrait or view is the same, viz., use the largest stop possible and obtain sharp definition; the only modification of this is to so arrange the stop before exposure as to get out the most detail in the deepest shadows, and still watch the detail of the whole subject, to be sure that no lack of definition does or can take place, then expose.

This method is open to criticism by those only who have not passed the experimental stage, for all who have done much have learned by frequent repetitions of experience, that no allowance can be made with any certainty of result from any tables or formulas, and it is profitable for any amateur or professional to make test exposures on the same subject, with different stops and the same plate; one extreme is too much softness, verging on indistinctness; the other the much-quoted microscopic definition with a painfully apparent lack of contrast, or flat negative. The happy medium lies between the extremes, and is as difficult to catch, in its exactness, as the precise instant to fasten the expression of a happy but very restless baby when under fire of a camera; and here, as in other points, judgment and taste, most indescribable qualities, are needed to the full. Words cannot express or describe all that a person must not only see and do, but what he or she must *feel*, at the instant, to be successful even in the exposure.

We hear so much of $\frac{f}{8}$, $\frac{f}{32}$, etc., that we sometimes feel like wishing it were possible to lay down mathematical statements of what to do, or not to do, but here again an obstacle meets us. Upon most careful measurements of some of these stops and the focus of the lens, we find $\frac{f}{8}$, as is marked, proves to be $\frac{f}{7.3}$, $\frac{f}{8.2}$, or some other indefinite quantity. From the fact well known to opticians, that each and every lens is an experiment, to some extent even if slight only, in variation one from the other, and the stops being made to one diameter, or area, vary in their exactness, as the lens does, and our only remedy is in fitting our work to the lens we work with, and this can be done only approximately from any table or other formula with any certainty.

The time of exposure has so very many elements of inconstancy, from causes over which we have no possible control, that the safe rule is to give ample exposure, *give enough*, not 3, or 5, or 100 times a normal exposure, but $1\frac{1}{4}$, $1\frac{1}{2}$, or something of that sort, with good light; and as light varies in intensity, or you come in contact with unfavorable atmospheric conditions of any kind, give enough, if possible, to make the best of the time, light, etc., remembering that the print, when finished, will be like it, and as the image on the ground-glass is, even if disappointing to us, for it will not in any way improve in the various chemical operations that follow the exposure.

(To be continued.)

Editor's Table.

The New Orleans Camera Club, through Mr. P. E. Carriere, favors us with a report of its recent outing which last was a great success. Likewise we are favored with the Guest's Badge of the Club, received too late, however, for any share in the excursion on our part.

Mr. W. D. H. Wilson, of Wilson-Hood-Cheyney Co., has favored us with some portraits from glass negatives, and some of the same subject from Carbutt's Flexible Films. Our choice would certainly be for the Flexible, since they give more half-tone and better detail without the hard contrast possessed by the glass negative. Mr. Wilson assures us that he finds the development of these plates equally as easy as the glass plates, and predicts a great future for them.

Mosaics, 1889, is ready, and thousands have gone out to the expectant readers. One reader

writes: "*Mosaics* is still a great favorite with the amateur and photographer, larger books at the same price to the contrary, notwithstanding." Rapidly growing interest in photography makes room for all of the annuals; and as *Mosaics* takes the smallest place it is natural it should come first. Its parts are closely fitted, and more pains have been taken this year as to color, shape, and utility. See list of of contents.

From correspondence with the distinguished secretary, we learn that a photographic society is being formed in Florence, Italy. The headquarters are at 11 Piazza S. Maria Novella, and the directors are Prof. Luigi Borlinetto, Anselmo Anghinelli, and Germano Salvi.

We wish a brilliant success to our friends in the most beautiful city of Europe, and hope frequently to hear of their proceedings.

From Mr. S. T. Blessing, proprietor of the Star and Crescent Photo Supply Houses, we have received the New Orleans edition of his splendid catalogue, No. 14. It is of the size of this magazine, 152 pages, magnificently illustrated, printed on a fine quality of hard calendered paper, and with a comprehensive index added. We have said so much about these beautiful catalogues issued by the dealers generally, that there is not much new left for us to say without repeating. We notice, however, in Mr. Blessing's catalogue, illustrations of some articles that are not generally used West and North, such as tents for out-door work and their accessories, and on one page we find a balloon. We believe, however, that this latter relates to Scovill Manufacturing Co.'s light-weight holders. We congratulate Mr. Blessing on having patience sufficient to carry him through such an extensive and important work as this.

Our Magazine For Next Year.—We are not going to do it now, but on the third page of the cover of our next issue, our readers will find we give important projects concerning our magazine for the beginning of its new era, 1889. Please be sure that you see them all.

Mr. John Carbutt is pushing his Flexible Negative Films for all they are worth. He exhibited them at a meeting of the Photographic Society of Philadelphia, on November 7th, and gave a very interesting lecture on the subject.

We have been much interested in the report of the Fairview Home for Friendless Children. This home is organized to improve the physical, mental, and moral well being of children, and to enforce the humane laws affecting them. One of the means of refinement used at the home is photography. A well-organized corps of young workers is busily employed with a camera, studying the mysteries of our art. Photographers having interesting pictures, or anything that will promote the pleasure and instruction of youth, will do a real good deed by sending packages to Dr. O. F. Cobb, Supt., West Troy, N. Y. The institution is entirely depending upon charity, and cannot be too much encouraged. The report is illustrated by some photo-engravings of some of the little waifs which are very life-like and effective.

We have received from the Leipzig retouching school the prospectus for the new year. This school has been organised for the purpose of teaching proper retouching. The prospectus includes a long list of testimonials from pupils and patrons, and gives the terms and course of study adopted.

It has been said that the stories so familiar to us older ones were getting out of print. This is not so, however. Messrs. Cassell & Co., of New York, have recently published a very beautiful edition of the Mother Goose stories, illustrated in colors; music by Miss Effie I. Lane, and the illustrations by Mr. J. Lewis Webb. The pictures are exceedingly clever and graceful, and will supply some lovely studies for pictures to photographers. If those who are interested in children will take a hint they will order the Christmas stockings very large in order to get in this beautiful and striking book. It is sure to focus where it comes near a child.

Photographic Mosaics for 1889.—Our little annual is ready for delivery. By reference to the advertisements it will be seen there are attractions added to it further than those detailed in the advertisement in last number. We have tried very hard to make *Mosaics* this year better than ever; and although it is not the most beautiful of all annuals, or printed on as thick paper, still it will yield to the demand of those who have been buying it for two dozen years, and preserves its old shape and size that it may appear uniform on their library shelves. With all its shortcomings, we give 144 pages of solid and useful matter, in paper cover, for 50 cents; cloth bound, gilt, $1.

Read the Christmas Story on page 695.

Mr. John E. Dumont, favors us with another composition print which he calls "Fisheries Question." It represents two gamesters seated, costumed in their hunting attire, at their table, comparing notes of the day's success. It is very excellent indeed. It is one of Mr. Dumont's best compositions.

Mr. C. C. Vevers, of Horsforth, Leeds, England, sent us a copy of his trade catalogue of specialties. Mr. Vevers is one of the most enterprising dealers on the other side, and Americans who need his servics, have special attention.

Messrs. Marceau & Power, Indianapolis, Ind., receive great praise from the local press for the artistic arrangement and furnishing of their new studio. All the fascinations of an oriental garden are involved in the arrangement, and, as these gentlemen are well schooled in their art, the public may expect the best of results from their cameras.

Mr. Chas. E. Loeber, of Loeber Bros., 121 Nassau St., New York, has succeeded in doing what it puzzled a goodly portion of the American army to do in war times, namely: Taken Libby Prison. Not only does he give us a very excellent view of the exterior, but he was also successful in photographing the inside, and in making his escape with his splendid Gundlach lens, which he used on the eventful occasion. Mr. Loeber supplies the trade with prints from these negatives. Many an old soldier will be glad to get them without taking the risk of a second imprisonment.

Carbutt's Flexible Films.—Mr. John Carbutt, Wayne Junction, Philadelphia, Pa., has reassured us on the subject of his new Flexible Films by sending us negatives from prints upon and from them which are of excellent quality. There is a peculiar softness possessed by these plates which the lovers of detail and half-tone will find very acceptable and attractive. We know Mr. Carbutt personally too well to dream for a moment that he would make the announcement he does concerning his Flexible Films without being sure that he was on the safe and certain side. He has also devised a very simple yet effective film carrier, that will enable the films to be used in any plate holder. It will not be covered by patents, but sold at a reasonable price. These films can also be used in the Scovill "light-weight," and the Blair "feather-weight" holders.

One of our subscriber writes us enthusiastically as follows:

"This is the eighteenth year I have been gleaning useful hints from the pages of your practical journal. It has often been, not only a great help, but many of the wrinkles published has saved many hours of worry and anxiety. Long life to the photographer's friend, Edward L. Wilson, and his Photographer."

Messrs. L. M. Prince & Bro., Cincinnati, O., issue a descriptive circular of their new improved "Utility Camera," with the outfits including it. The Utility seems to be very compact and perfect, and must prove acceptable to those who use it.

Mr. L. R. Long, of Waterbury, Conn., favors us with a bromide print which he calls "Down Stream." It is strangely like Mr. Walmsley's "Up Stream," having the same kind of an old leaning tree on one shore, with the beautiful reflecting bit of water, the bridge in the distance, and masses of luxurious foliage on the other side. As a print it is very excellent, and the negative must be a gem.

Mr. D. A. Loomis, Fredonia, Kansas, offers $25 reward for the recovery of a Euryscope lens, No. 27,362, and other articles, stolen from his gallery on the night of September 21st. Particulars may be had from Mr. Loomis.

More Triumphs.—At the Centennial Exhibition held in Cincinnati for the past few months, Mr. J. Landy obtained for portrait photography the gold medal; for pictures on porcelain the silver medal, and for composition photographs a silver medal. Triple congratulations to Mudgekeewis.

Pictures Received.—Mr. J. Wiltse, Mitchell, Dakota, has favored us with a batch of cabinet pictures from his studio, which, in technique and finish, would do honor to our best eastern galleries. They show the handiwork of a careful and intelligent operator and artist, and are worthy of high commendation. The retouching is particularly excellent from the fact that there is not too much of it.

Mr. J. H. Iden, Borboun, Ind., favors us with two pictures of a little girl dressed in the costume of a huntress. They are excellently posed and lighted. On the back of one we learn that they were made with a Suter B No. 5 lens, and their excellence proves it.

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PURPLE CRANE, NEB., September 14, 1888.

WANTED, to make up a file, the PHILADELPHIA PHOTOGRAPHER for Dec. 3, 1887. Fifty cents will be paid for the same, or *Mosaics*, 1888. Please try and oblige. EDWARD L. WILSON,
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$50 REWARD!

For the arrest and conviction of a person describing himself as an agent in our employ, who has been endeavoring to defraud photographers, and by his reports damaging our business.

He has been described as an Englishman, sandy hair and complexion, clean shaven face, deep sunken eyes, large mouth, full round rough voice, a quick talker, and evidently well posted in photography.

This party has traveled through Pennsylvania inside of three weeks, and appeared in Pittston, Scranton, and Towanda, also in Waverly, N. Y., and endeavored to swindle photographers in each of these places.

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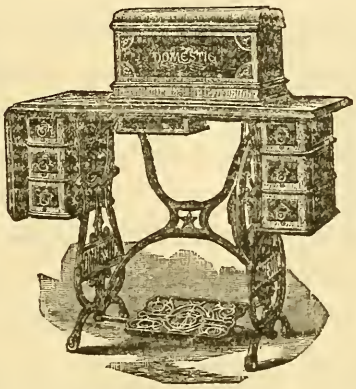
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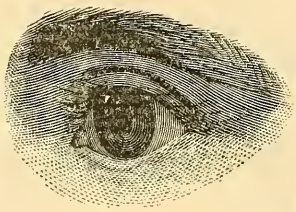
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Such questions as the above form a large part of my daily fare They are the outgrowth of a quarter of a century of enjoyable service as a photographic journalist and photographic teacher. No one man, however, could carefully answer all these queries promptly and attend to his other duties too; therefore I was obliged to resort to the methods of other teachers who cater to the public wants, and *write a book that would help.* Almost every interested one has it. I allude to

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11. Exposure, or the Question of Time.
12. Concerning Chemicals.
13. Dark-room Contrivances.
14. Negative Making, Wet.
15. Negative Making, Dry.
16. Negative Making, Paper and Film.
17. Retouching and Doctoring the Negative.
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A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better.—DEAN WRIGHT, in the April *Boston Academy*.

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It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

Text and extracts are fully and admirably illustrated, as will be shown by the statement that nearly four hundred cuts, illustrating processes, principles, and apparatus, give point and interest to the text and extracts alike. The thoroughness, and what may be called the impersonality of the book, is shown by the list of authorities who have been laid under contributions, a list which includes nearly three hundred names of professional photographers and scientific authorities, as well as of amateurs, whose experiments and observations are not the least in value.

A good index, fairly well cross-referenced, makes the book useful for quick occasional reference.—*Amer. Architect and Building News.*

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"The work is of the very highest value as guide and companion to the process-worker.

"The book will undoubtedly enjoy a long and a wide sale. In its production the author and the editor have accomplished a feat which is worthy of themselves, and one which is of great benefit to the photographic reader."—*Photographic Times.*

"The work of Mr. Wilkinson has been known in England for some time in a small volume; but Mr. Wilson has so completely modified, revised and enlarged the book, that we hardly knew it when we received a copy lately. The work is thoroughly practical from cover to cover; it is well illustrated and nicely printed. It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Mr. Wilson's own contributions and translations from the French and German, make the new book eminently thorough. There is already a demand for this kind of work and many inquiries for instructions come to us. Every one who wishes may now easily learn how to supply plates for all classes of *illustration,* and the book will also show how to select and apply the requisites for production. A demand has surely come, as all newspapers, magazines and crafts use photo-engravings. We heartily recommend to our readers a book that is so well made and edited as the one before us."—*Anthony's Bulletin.*

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EDWARD L. WILSON, Publisher,

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(See next page.)



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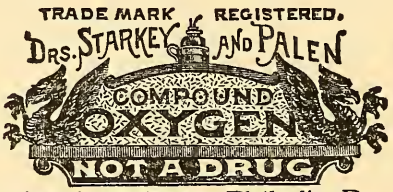
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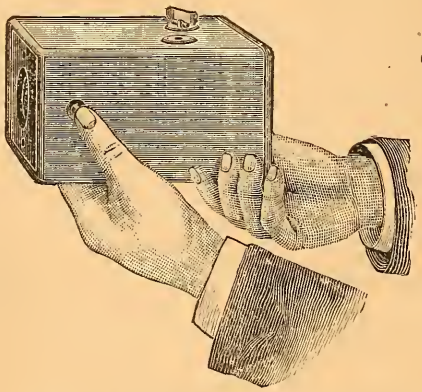
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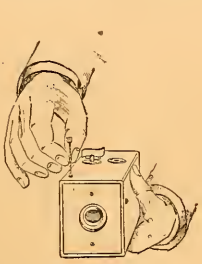
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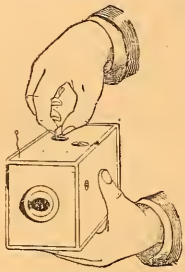
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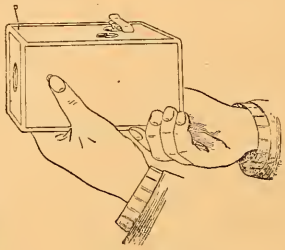
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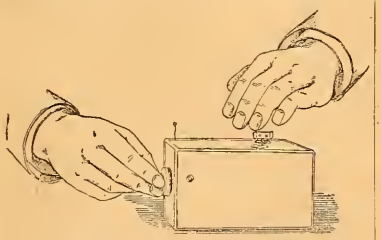


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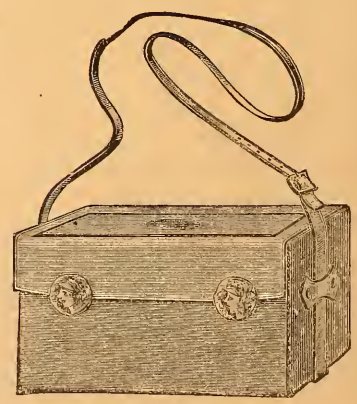
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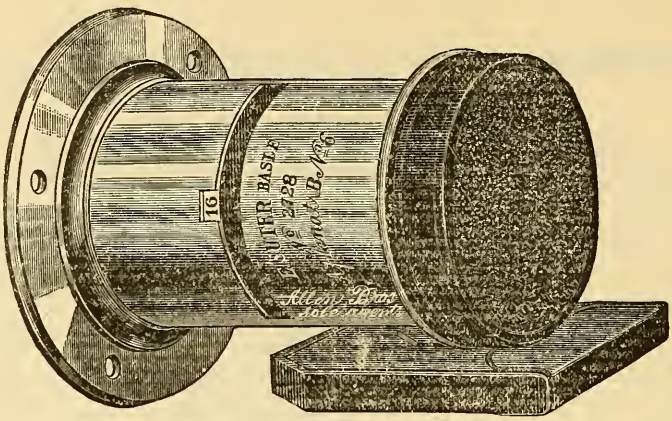
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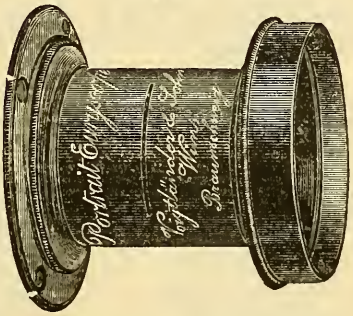
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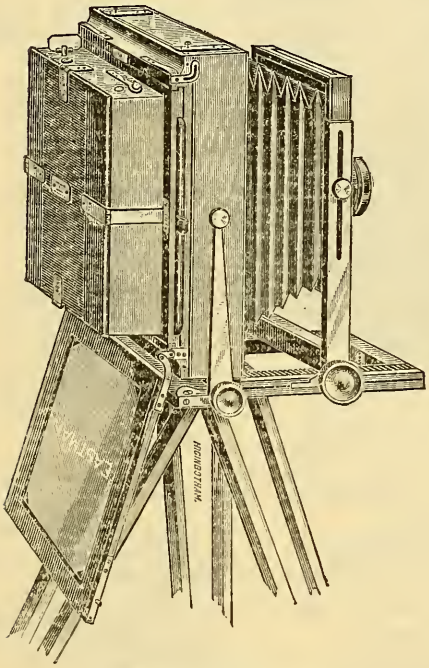
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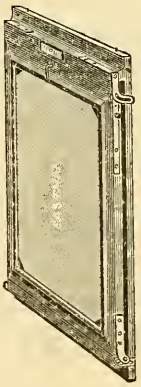
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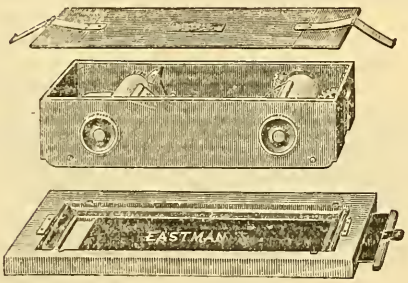
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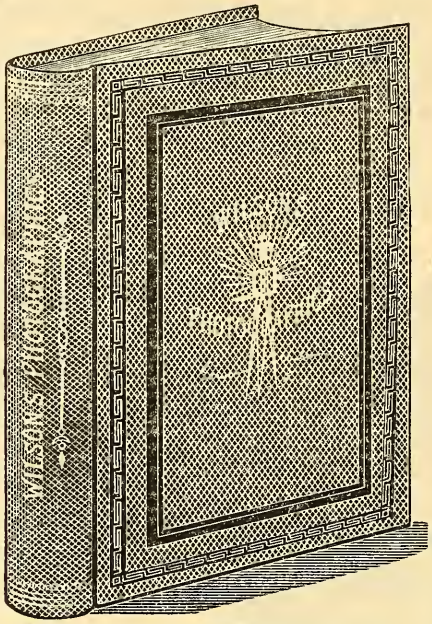
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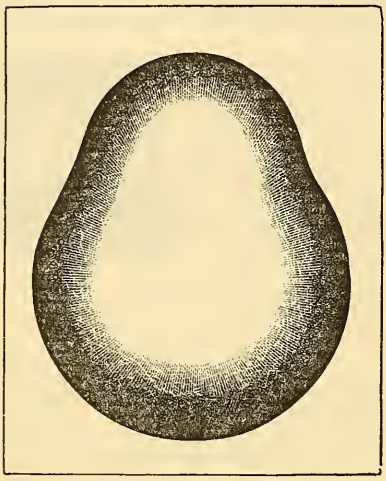
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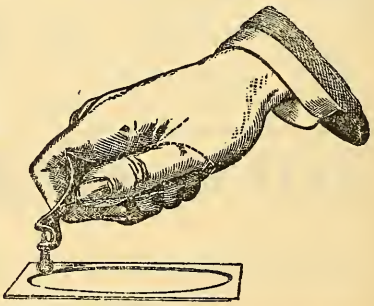
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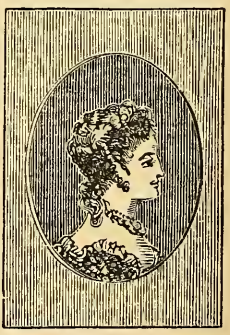
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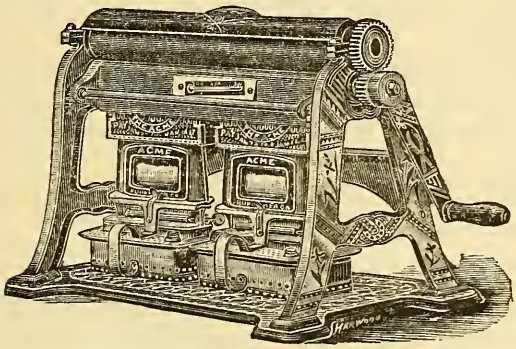
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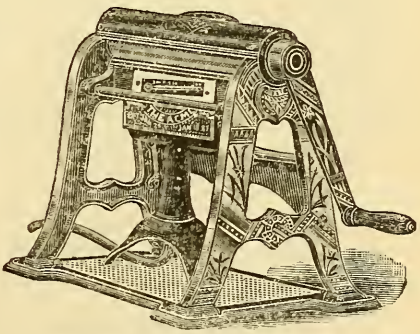
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THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. DECEMBER 1, 1888. No. 335.

1889.

A HAPPY NEW YEAR ASSURED.

Two important changes will be made in the conduct of this magazine, beginning with the coming *new year*. While they will amount to a regular revolution, they need not in the least affect our staid and loyal friends and readers. The same head and hands that originated this magazine, and which have propelled it since its start, will continue their work without change or help —only the name of our magazine will be changed, and a little bending made in behalf of those honest workers who seem to think they need it.

Beginning January 1889, this magazine will become WILSON'S PHOTOGRAPHIC MAGAZINE, in commemoration of its entry into a second quarter century and the semi-centennial anniversary of photography. Its local name will be dropped, and it will become *everybody's* Photographer.

The semi-monthly issue will continue at $5.00 a year; those who wish it but *once* a month will be supplied thus at $3 00 a year, thus giving them the best magazine at the popular rate, though we believe all the old subscribers and many new, will renew for twice a month. Further as to our plans and prospectus will be found on page 3 of the cover. Please renew promptly.

FOR NEXT YEAR.

UNUSUAL preparations are already far advanced for a rich store for our 1889 readers. Every number will be embellished by a fine frontispiece, as heretofore. Examples of fine portraiture; splendid character studies; landscapes and art lesson selections.

New departments will be devoted to short, terse, practical hints, amounting, at the end of a year, to a splendid book. Some novel, elaborately illustrated articles, both amusing and instructive, on posing and the use of accessories and backgrounds will be started soon. A series of reminiscent articles in honor of the jubilee year (semi-centennial of our art), will begin in January. A complete manual on painting backgrounds and accessories, by the veteran background-maker W. A. Ashe (deceased), of New York, will appear in chapters. It will be invaluable. The present variety of columns, under the care of the editor, will be continued, and it will be his constant effort to make his magazine maintain its longtime position, as "*the best in the world*," and the cheapest. His long experience enables him to secure and give the choicest the photographic world affords. Subscribe early and secure all. *When* you buy instruction secure experience with it.

PRACTICAL PHOTOGRAPHY FULLY EXPLAINED.

BY DR. J. H. JANEWAY, U. S. A.

(Continued from page 677.)

CONCLUSION.

With the exception of landscape work, which has been ably written on by many writers, all the more important branches of photography have been considered, especially those which the amateur should be more or less familiar with. If you think that I have dwelt too much in these papers upon what may have appeared trifles, let me remind you of the saying of that celebrated architect and sculptor, painter and poet, Michael Angelo: That it was by trifles that perfection was gained, but perfection was not trifles. One cannot be too careful in any profession or walk in life, if he hopes to attain to excellence, of the little things that in the aggregate make up the whole. And it is especially necessary in photography that all the little minutiæ in details, that may and do to some appear to be trifles, should be carefully noted and acted upon in order to obtain a perfect picture. I have frequently in these articles urged upon you the necessity of reading and studying, of hard conscientious study; and in addition I further urge you to keep a note-book, a sort of index review of what you have read. Whenever you see a new process recommended, a new formula, or a cure for some mistake or disaster, etc., enter it in the note-book and index it under the appropriate letter and head. If the article is too long to insert in full, then enter the title, and in what book or journal, and page of the same you saw it. You will be surprised at the amount of information you will have at your finger ends, and instead of hunting aimlessly through the whole of your collection of books for what you want, and at the expense of time, too, you have only to turn to your note-book for the desired information and get it. I would also urge that whenever you begin to feel your way that you should join a photographic society. You need not fear that you will meet with ridicule or sneers on account of your want of knowledge; on the contrary you will meet with nothing but kindness, and a sincere desire on the part of the members to solve all your doubts and make plain the difficulties that beset your path. And, finally, when you begin to be familiar with the required manipulations, drop the letter of instructions and trust to your own intelligence to carry out the spirit of the same.

A Few Wrinkles.

Weak negatives can be made to give good prints by placing over them glass tinted yellow or light-orange. Prepare the tint required by dissolving yellow or orange dye (diamond dyes) in alcohol and adding this to negative collodion or varnish, flow it over the plate, which has been previously cleaned. These dyes are very cheap, and can be procured from almost any druggist.

Frilling.—A puckering of the film at the edges of the plate, oftentimes produced either by having the developing solution too warm or a too strong solution of hyposulphite of soda as a fixing bath—especially if it is slightly acid. Stopped by plunging the plate in a saturated solution of alum; keeping all the solutions cool and at the same temperature, neutralizing the hypo, and in hot weather putting a lump of ice in the fixing bath. Some brands of plates are very vicious in this respect; then plunge them in the alum bath right from the developer, and without washing.

Blisters.—By gradually diluting the fixing bath a short time, say, five minutes, before the prints are fixed, with water, a quarter of the bulk at a time, will almost always prevent these pests, provided your fixing bath is alkaline at the start. But sometimes nothing will prevent them, treat them as you may. They are in the paper, and will come out.

Eliminating Hypo from Prints with Safety.—If short of time, the hypo can be eliminated from prints with safety, after a short washing, by placing them in three baths of a strong solution of common alum, allowing five minutes' immersion in each bath, and a washing of the same length of time after each bath.

(Prepared for the Society of Photographic Amateurs of New York.)

Table of the Solubility of Chemicals in Water.

Abbreviations: s. soluble; ins. insoluble; sp. sparingly; v. very; alm. almost; dec. decomposed.

Chemicals.	Water.	
	59° F.	212° F.
One part is soluble in:	Parts.	Parts.
Acid, Citric,	0.75	0.05
Formic,	v. s.	v. s.
Gallic,	100	3
Oxalic,	8	1
Pyrogallic,	3 5	v. s.
Tannic,	6	v. s.
Alum,	10.5	ins.
Chrome,	10	dec.
Ammonia, Nitrate,	0.5	v. s.
Chloride,	3	alm. ins.
Carbonas,	4	dec.
Sulphocyanate,	v. s.	v. s.
Ammonium Bromide,	1.5	0.7
Iodide (white),	1	0.5
Baryta, Nitrate,	8	3
Cadmium, Bromide,	v. s.	v. s.
Iodide,	v. s.	v. s.
Copper, Acetate,	15	5
Sulphate,	2 6	0.5
Gold, Chloride,	v. s.	v. s.
and Sodium, Chloride,	v. s.	v. s.
Iron, Chloride,	v. s.	v. s.
Phosphate,	v. s.	v. s.
Pyrophosphate,	v. s.	v. s.
Sulphate,	1.8	0.3
and Ammonia Sulphate,	3	0.8
Iodide,	v. s.	v. s.
Iodine,	7000	
Kaolin,	ins.	ins.
Lead, Acetate,	1.8	0.5
Chloride,	ins.	33
Nitrate,	2	0.8
Lime, Bromide,	0.7	v. s.
Chloride,	1.5	v. s.
Lithium, Bromide,	v. s.	v. s.
Iodide,	v. s.	v. s.
Magnesia, Nitrate,	v. s.	v. s.
Mercury, Bichloride,	16	2
Cyanide,	12.8	3
Potassium, Acetate,	0.4	v. s.
Bicarbonate,	3.2	dec.
Bichromate,	10	1.5
Bromide,	1.6	1
Carbonate,	1	0.7
Cyanide,	2	1
Ferricyanide,	3.8	2
Ferridcyenide,	4	2
Ferricyanidum,	4	2
Potassium, Nitrate,	4	0.4
Iodide,	0.8	0.5
Oxalate,	v. s.	v. s.
Permanganate,	20	3
Sulphate,	9	4
Sulphite,	4	5
Sulphuret,	2	1
Silver, Nitrate,	0.8	0.1
Oxide,	v. sp.	v. sp.
Sodium, Acetate	3	1
Bromide,	1.2	0.5
Bicarbonate,	12	dec.
Carbonate,	1.6	0.25
Citrate,	v. s.	v. s.
Granulated,	v. s.	v. s.
Hyposulphate,	1.5	0.5
Hyposulphite,	1	0.12
Iodide,	0.6	0.3
Nitrate,	1.3	0.6
Phosphate,	6	2
Pyrophosphate,	12	1.1
Sulphite,	4	0.9
Sulphate,	2.	0.4
Tungstate,	4.0	2.0
Strontia, Chloride,	1.88	v. s.
Uranium, Nitrate,	v. s.	v. s.
Chloride,	v. s.	v. s.
Persulphate,	v. s.	v. s.
Zinc, Iodide,	v. s.	v. s.
Bromide,	v. s.	v. s.
Chloride,	0.33	

Sometime you may be so unfortunate as to break your ground-glass, and are in such a position that you are unable to procure another at once. By the following process you can obtain a good substitute: Expose a plate to lamp-light about five seconds, at a distance of about twelve inches from the light, develop as usual, but do not push the intensity. Wash, and give it an alum bath for five minutes, wash and fix; wash thoroughly, and give it a bath of bichloride of mercury until it grays, then wash and set aside to dry. It will resemble the finest kind of ground-glass, and give you good results in focussing.

Exposed, or not?—A question that doubtless has arisen to every amateur. There is a simple way of finding this out without spoiling the whole plate. If you have a doubt about a plate, cut off a corner with a diamond to the depth of between one-quarter

to three-eighths of an inch, and develop the small piece; or a drop of the developer may be applied directly to one corner; if the developer has no effect upon it then the plate has not been exposed. But should your holder leak, then the result may be different, and other corners should be tried; let the developer act on it sufficiently long to be sure.

A DISTANT object, like a mountain or high hill, will require one-half less time for exposure than an object but ten feet away.

THE times best suited for instantaneous photography are from April to August, from 10 A.M. to 2 P.M., with such good lights as you can get at the seaside, or in the country after a brisk rain. If possible, keep the sun over one or the other shoulder, and not immediately behind you.

Use rapid plates, not under twenty-three sensitometer number, a good rapid rectilinear lens, and a shutter that can be made to go fast or slow, with a good pneumatic ball attachment.

IN landscape photography, introduce, if possible, a figure, and let the figure be posed as if unconscious that a picture is about to be taken; but be exceedingly careful that the dress of your figure is in harmony with the subject. A milkmaid or harvest maiden in lace and silks, with a La Tosca hat adorned with feathers and flowers, and high-heeled boots, would not, I think, be very appropriate. Neither would a young man dressed in the height of fashion, hat a little to one side, an eye-glass studiously placed, high-standing collar, faultless pants as to the knees, and a light cane, look well between the handles of a plow as a plow-boy. Avoid also a sameness in the dress of your figures. It would look too much as if you hired them for the purpose, and that poverty was their misfortune. Therefore, remember that each and every landscape requires its own handling, and that when human figures are introduced, some modification or entire change of dress and style, is absolutely necessary to render the picture harmonious and sympathetic.

A FEW WORDS ON GELATINE.

BY AN OLD CONTRIBUTOR.

LAST spring I prepared three batches of emulsion, all of which failed me, by reason of fatty matter or grease in the gelatine I used. It was Simeon's, though the same make gave me good plates before. Perhaps the makers have since grown very careless. I for one will not use that make of gelatine again.

A dozen of these plates I put away for future use, after having packed clean No. 1 photo boards between them. This fall I tried a plate. It is now plain to me that the cardboard, being pure, had no effect on the plates. Hence I would recommend their use to amateurs and others who wish to transport their plates long distances. It will be evident that in case a box is carelessly opened only one plate will be spoiled instead of the whole dozen, when cardboard is used in packing. Plate boxes sometimes break at top or bottom, and light then comes in to play mischief.

All authors seem agreed that those spots on plates which refuse to develop, and which, after fixing, show clear glass-like air bubbles, come from grease or fatty matter in gelatine. Any gelatine that will give them ought to be rejected, for that will unfit it for any process. The platemakers undoubtedly have their secret ways of removing the fatty matter. It seems to me that the gelatine manufacturers ought to attend to that business themselves. What right have they anyway to offer us impure articles, and thus make heavy drafts on our time, patience, and purses?

There is another pest in the emulsion work which we have to grapple with, that is opaque spots. It seems to me that they come from metallic particles or dust in the gelatine, or, perhaps, foreign matter in water, notably sulphate or minerals. A writer in the *British Journal Photographic Almanac* of 1886, on page 77, seems to treat the matter in a masterly manner. He recommends a thorough filtering of gelatine before use, as then it can be done in daylight, and so perfectly clear. I believe that he is right, and recommend that his directions be followed. More anon!

THE MISTAKES AND MISERIES OF PHOTOGRAPHERS.

For Professionals and Amateurs.

BY THOS. PRAY, JR.

Boston.

(Continued from page 702.)

We now come again to the ever-changing and hackneyed subject of development, in this case to be considered only on general principles, as slow or hurried, in the relation to the final result.

If exposure is scientific then development is artistic, and the more interest of an art nature, the more of feeling one puts into development, or the further one gets from any possible attempt at mechanical or formal manipulation of a plate in development the nearer he or she will get to a sure and complete development; it is exactly the final success or ruin of the whole previous combination, and the success of development means beautiful results and satisfaction. Then if experience teaches the proper modifications, we soon get at the capacity to reprodnce them, and it is exactly at this point so many of the votaries of photography, either amateur or professional, fail, because they expect to develop in some near relation to a mechanical way, or by simple repetition, just as a woman "washes dishes." The thoughtful and observant man at once appreciates the fact, that manual repetition is not at all to be entertained for one moment. The subjects presented in an earlier part of this article were very decided contrasts of complexion, as well as of dress or adornment, all occurring so frequently, as to puzzle the developing artist from beginning to end; and these contrasts must come up and out visibly, or the effect of the whole pose is lost; not only this, but without the shadows, and the merest apologist for art in photography would be compelled, and at once, to abandon the business, because the customers who know little of art, and usually care less, would not consider for an instant the taking away of shade, or the prominence of shadow, at the expense of harmony, and the artist's work would be left on his hands, and his customers rapidly disappear, dissatisfied as well.

From this, a selfish standpoint, the necessity becomes absolute to the professional, of getting the most perfect results with a minimum of plates, of time, and hence of expense, and no man or woman in the world can so demean themselves as to lower their standard, and become an automaton, in the line of photographic productions, even if such a thing were possible; and in any business, the man or woman who put the whole soul, or energy, or aptitude, into doing his or her work better in quality, rather than quantity, is sure, in the continuance of such a system of working, to produce quality, and also of obtaining more cash for the output of ability—and the bread and butter question cannot be ignored by the photographer who works for his living rather than his amusement.

In developing, it is not at all my idea to advocate any one set of solutions or chemicals, for the simplest and best of reasons, viz., no universal developer has been produced, or can be, until all the emulsions are nearer alike in the chemical constituents, when in the combination—for we have elements similar, as well as dissimilar—in all the different plates; but in the combination of these elements in the emulsion on the plates, we have such a diversity of properties, speeds, etc., that no one developer can or will produce proper results upon any number of different plates, were all other conditions quite similar.

Exposure having been made, and the above questions duly considered, the development question comes up again.

Pyrogallic acid, so called.

Carbonate of soda.

Hyposulphite of soda.

Bromide of soda.

Water.

Any one of the real acids—sulphuric or oxalic.

Alum.

These seven substances cover the entire ground of what is necessary to do the finest portrait work, or the prettiest view ever fastened on a plate by exposure, and in their modulations they multiply and produce changes to an almost infinite number, as sulphite of soda, and the greater or lesser lights of development. My statement is, that these

are amply necessary, and with them all that can be accomplished by any one, upon any good plate, can be done with these few and simple chemicals. But there are so many substitutes used, and so many so very useless and unnecessary articles used, that people who do not understand chemistry suppose *must* be necessary, that we will only mention as alkalies potash and ammonia as most prominent, while for some purposes oxalate of iron is supposed to be very necessary; while all the curious phases of chemical combinations arise out of these few simple named substances, by which negatives or the positive can be made as quickly, as well as cheaply, as by the most extended list of *supposed* substances that are used and considered as necessary.

The two prime elements are pyro and soda, the others serve only a secondary purpose, or do not develop, but clear or bleech. Now, the amount of pyro or soda that a plate will require to preserve the best results *is not* a constant quantity. One plate is hungry for five grains of pyro per ounce of developer, and eight or ten grains of soda per ounce of developer, and the next plate comes up with one-half the pyro and one-fourth the soda, if properly exposed. And with various and erratic modifications of these two elements, that are as changeable as the wind, or as captious as the traditional girl of seventeen, from the differences that exist in the emulsion on the plates. All these things we have to learn, to a a great extent, by experience; knowing only that pyro gives density, and soda gives detail. *Now the exact point* is one upon which no sort of formula can be written that is reliable. Let us suppose a case. We have a white house, green vines, and trees in full leaf; sunshine; not a white cloud in sight, and the shadows of vine and trees can be seen on the ground-glass as clearly as with the eye outside of the camera. We use three plates by different makers, one has exquisite detail, lacks density; one has density but lacks detail, and one is quite too flat or indistinct. Here we have the peculiarities of the plates as individuals. Now, we will take a plate of medium speed, 15, 16, 17, and expose on same house and view, and develop until we find harmony all through the plates, and by care produce the best results, and note the strength of combination. We are now all right, and that question is settled? Oh, no. We will now get on the side of some hill or building, and get in deep shadows. By using the same developer, we get a rather harsh negative, too prominent in high-lights, lacking in detail in shadows. What's the matter? Why, the developer *is not* proportioned to the subject. Here then, we are at the door again. What shall we do in order to succeed? All this is exactly as applicable to a portrait as a view.

Now we come to one of the questions I have never seen discussed, and it can be plainly stated right here.

Alkali solutions cannot be measured wtth any certainty by saying *so many* grains per ounce; crystals granular, or otherwise; for the very simple reason that more or less water is combined, and when a certain number of ounces of carbonate of potash, carbonate of soda, sulphite of soda, etc., are dissolved in water, so many ounces, *we ought to have*, so many grains of soda per ounce of solution, and it is quite as certain that *we do not.* The chemical peculiarities need not be discussed, the facts are as stated. Now, what can settle the question? will be the inquiry. Use Baumé's hydrometer, which is many times as correct as any possible calculation. This little instrument registers in degrees when put into a solution, and the reading gives actual facts *at the time*, for temperature varies the strength of such solutions very materially. Here then we have a reference, reliable, readable by any one, and no need of any calculations to get at the strength in grains or otherwise. A soda solution can be made up to 20° to 23°, and any one will be surprised to see what an amount of change of action on the same plate a difference of ½° will make in the diluted solution. But let me take our 20° to 23° solution and dilute it to 4°, 3°, 2°, 1°, and then take a solution of pyro of 2 grains, 3 grains, 4 grains, or any other stated number of grains per ounce, and made up developer of 1° Baumé, one of 2°, and a third of 4°, to which pyro and bromide in very small quantities, of a 15-grain per ounce solution can be added, and develop in either one of the three solutions, or start the development in the weakest, and unless it

changes in correct proportions, change it over to a stronger, and so obtain all the density and detail proper, when printing qualities are considered.

While this leaves much to be determined by the operator, it cannot be stated with exactness for any given plate, unless the lens, light, stop, and subject are all specifically stated, and any such directions would be worthless for the second inquirer. If we take three plates and the same subject, same lens, same stop, and properly expose, we shall need to obtain best effects, different degrees of both pyro and soda in strength of developer, as well as bromide; and this last my own experience has proved to me that with soda developer, the use of bromide of ammonia is not at all admissable, especially in quick plates, causing green or red fog; and bromide of potassium gives harshness, while bromide of soda gives finer and better modulations in portraiture, and is far better to control either soda or potash developers than any other of the bromides.

Here we can get at deductions which are applicable to all plates, but it must be understood that the degrees of both pyro and soda change for different plates.

Blonde face, light dress, etc. Pyro small, alkali weak, small amount of bromide.

Brunette, dark hair, eyes, and dress. Medium pyro, alkali medium, and very small amount of bromide.

Dark brunette, very dark hair, black dress, etc. More pyro, stronger alkali, and smaller amount of bromide.

The weak alkali will show on Baumé 1° to 1½°+, and will contain 8 to 10 per cent. of soda.

The medium alkali will contain 12½ to 15 per cent. of soda, and register 2° or upward, perhaps 2¼°.

The strong alkali will contain 20 to 25 per cent. of soda, and register 3¼° to 3½°, on the hydrometer.

In a general way, the darker colors require more alkali, and so on down to the weaker colors, weaker alkali; and it can safely be adopted by either professional or amateur, that the full exposure, referred to in earlier portion of this article, with full and prolonged development, and *moderate* strength of alkali, rather leaning to the weak, and slight amounts of bromide, *invariably* make the most beautiful results when the "cabinets" come to be delivered.

I am well aware that many of the operatives wish to see an image come up fast when they develop a plate, on the same principle the old collodion plate "came fast if good;" but I think most of the artists now have changed their opinions, as well practice, in this point, with appreciable change for the better in results; and those who may in the future adopt this plan, and will be careful in becoming familiar with it, will, without any doubt, become quite as pronounced in their preference, as they become successful in results, and in that they most assuredly will be.

So many changes are rung on the developer and its constituent parts, that any developer can be handled as outlined in this article, subject to all the additions and subtractions any one may feel like making. But it is in photography as in mechanics, the shortest way is usually the best, and the shortest is always the simplest; so that the simpler the developer the more certain are we to obtain uniformity of result; for this reason in my own work, long ago, all extras were and have since been excluded. Pyro is mixed for the moment only; and the absurdity of pyro preservative being a chemical impossibility, is among the discarded. The solution of pyro can be kept almost colorless with oxalic acid or sulphuric acid, and their value is as named in order; but the activity of pyro in solution, two months old, as compared with fresh solution, is that 2 grains of fresh (to-day's) solution does better work than 5 grains of the *best preserved* solution two months old. Yet many people are now using "preserved pyro," and frequently blaming the plate-maker. For portrait work, and in studios where considerable amounts are in use, pyro can be kept a few days, but far better results can be had by fresh or every-day solutions. The clearing of the plate by a simple alum bath of 2½ ounces of powdered alum to 20 ounces of water, after developing and washing, is of importance, and both as a chemical process and a matter of cleanli-

ness, so far as the hypo bath goes, for if you keep all developer out of the hypo, you will certainly *not* contaminate one plate by any possible impurity from another.

Then wash the plate and leave it in the hypo fixing bath, and after the plate is most completely cleared and again washed, use a second alum bath for ten to twenty minutes, and you will never have occasion to regret your pains, for brighter and clearer negatives you never did or will see. The first alum bath the plate should only be left in ten seconds, or enough to clean off the developer, and this *first* alum bath should be frequently changed, or as often as it appears yellow, as also should the second, but the plate is to be used to the following treatment:

1st. Developing, then wash.
2d. First alum bath—ten seconds—wash.
3d. Hypo fixing bath, wash.
4th. Last alum bath, ten minutes or more.
5th. Final washing of two hours.
6th. Dried and varnished.

One more point and this article will be closed. Never, upon any authority, nor for any reason, submit your plates in process of clearing to any bath that contains alum and hypo; this combination has in it all the elements of destruction to the gelatine film containing reduced nitrate of silver, for a long time afterwards sulphur compounds, which spoil the negative for printing purposes appear; and the process, the mixture of alum in hypo, is unclean. The object aimed at by mixing, viz., hardening so as to keep from frilling, is much better attained by separate baths; and as only one of the American plate-makers advocates the use of this admixture, I desire to call the attention of plate users to the fact. Mr. Cramer's plate requires the weakest soda solution of any, and for that reason the sulphur compound will be slow in forming; but while the bath, as he advises it, may in his own plates be permissible, in some others it would be positive injury if not ruin; and in case of his own plates in my hands, I vastly prefer the use of baths as above, and hope to know of any facts in contradiction of this from any reader of the PHILADELPHIA PHOTOGRAPHER, who has the experience to confirm him in the opinion that it is either safe or advantageous.

INJURIOUS MOUNTING BOARDS, AND HOW TO TEST THEM.

FEW injuries inflicted upon the photographer are more disastrous to him from a business point of view than the injuries inflicted by those who, either from carelessness or out of commercialist greed, supply mounts whish contain destructive or damaging material which, in so many cases, only manifests itself when the mounted photographs have been sent out to customers, and are beyond the recall of the photographer.

We propose, in the present article, to give simple instructions, by following which the practitioner may generally guard against serious loss of reputation by the use of the injurious mounts now so largely in the hands of dealers, and coming, for the most part, from Germany. Indeed, so serious has the question of bad paper material become in Germany, that an imperial commission upon the subject has been instituted, and this commlssion has very heartily condemned the German commercial papers of the time as practically worthless for permanent documental use; and the result is the establishment of a paper-testing institution at Charlottenburg, where all papers intended for Government use are to be tested. The badness of the commercial papers tested depends partly on the use of unsuitable fibre, and partly on the imperfect removal of the chemicals used in the preparation of the fibre. From a photographic point of view the imperfect removal of chemicals is, perhaps, the most important one, an unsuitable fibre, if properly cleaned and freed from chemicals, may be poor in quality from the point of view taken by an official examiner of paper, and yet be suitable enough for making photographic mounts when no great strength of the cardboard is required. On the other hand, a fibre of good quality, if imperfectly freed from hyposulphite, for example, may be reasonably good from the point of view of the ordinary paper exam-

iner, but rapidly fatal to silver prints mounted upon it.

Still, as a very frequent thing, low quality of fibre and imperfect removal of the chemicals go together; and although some excellent mounts of German make are in the market, the fact remains that, at present, the average standard of the quality of the German mounts is a very low one, while some sold are so bad, both as regards the fibre and the non-removal of chemicals, as to be alike a disgrace to manufacturer and vendor.

A new source of mischief in connection with photographic mounts has been brought into comparative prominence recently: that of the use of an enamel easily softened by water, and containing soluble coloring or other matter, which readily passes into the photographs and injures them. In our issue of July 6th last, we referred to such mounts in the following paragraph: "We have had complaints of a new kind of deleterious mount. It is of a dark chocolate color, and contains a soluble red coloring matter, which permeates the print more or less rapidly, according to the softness of the paper and the amount of moisture used in mounting. These mounts may be recognized by soaking in water, and then leaving under pressure with white paper on each side." As we intimated in the above paragraph, mounts containing soluble coloring matter in the enamel can easily be recognized by being made moist, and pressing between white blotting paper, when the color sets off on the blotting paper. To perform the test, perhaps the best method is to dip a piece of the mount for a few seconds in warm water, and then lay it between sheets of wet blotting paper for an hour or so, a moderate weight being used to keep all in contact. Some samples of mount we have met with are so bad, that the soluble coloring matter streams out when the test sample is first put in the warm water, and, in this case, it is of course superfluous to apply any further test.

The injurious effect of the mounts containing soluble coloring matter is most immediately manifest in the case of prints on soft paper, such as salted paper; next to which we may range platinotype and matt bromide paper; and last of all albumenized paper; while in every instance the mischief is much enhanced by the continued presence of moisture.

From time to time we have given particulars as to chemical methods of testing mounting boards for the more commonly occurring chemical impurities, but to obtain certain and definite results involves a skill in chemical manipulation which many photographers do not possess. In addition, it is to be remembered that there are so many chemicals to be sought for, and there is such a constant liability of fresh chemicals being imported into the paper manufacture, that even when a chemist has proved the absence of chemicals generally recognized as common impurities, it does not by any means follow that the mounts are harmless.

Considering all this, we again recommend a course which we have several times recommended—the mounting of trial pieces upon the various samples of cardboard to be examined, and the exposure of the samples to air and moisture. When this sort of test is carefully made it often happens that an indication of special badness in the mounts is obtained in the course of a few days, while in almost all cases of distinctly bad cardboard there is an obvious indication in a fortnight.

With respect to the actual method of performing the test we may recommend the following:

First procure as a standard, a mounting board known to be of good quality — a matter quite easy in an old-established studio—where batches of mounts have been used and found satisfactory. An old mounted print which has not faded is often useful, as one must assume the mount to be good, and the back is generally available for experiment. In the standard mount, punch with a gun-wad punch as many holes as there are new mounts to be tested, and in each of the holes lay a corresponding disk punched from one of the mounts to be tested, and then mount an ordinary silver print over the whole. The print mounted on the composite card is now left in a damp place and observed from time to time. In order that any slight fading or discoloration may be easily recognizable, the print should

not be too vigorous; indeed, it is worth while to make a special negative consisting of stripes graduated from a middle tint downward.

Near a window, in a damp cellar, is a very good place for keeping the trial print, but inside a window fern-case is, perhaps, better.—*The Photographic News.*

CHARCOAL DRAWING.*

It is doubtful if there be any branch of art work more helpful to the beginner than the study of charcoal, and it is doubtful if any be more neglected. The best teachers, however, insist upon its use, even after the pupil has become somewhat advanced, and certain it is that accomplished artists consider it an invaluable vehicle of expression. A stick of charcoal in the hands of one who knows how to use it is capable of producing wonderful effects—crispness, transparency, atmosphere, and all the variety and delicacy of texture which make a drawing attractive. With it a broad tint or a fine line may be drawn with equal ease; it offers a wide range of values, and, above all, may be readily obliterated, thus admitting of endless alterations and corrections. These qualities are alike useful to both student and artist, but in a different way. The artist will dash off a charcoal sketch upon the instant. He is master of form, and need not sacrifice anything of brilliancy or transparency by repeated erasures. The student, on the contrary, must continue to brush out and rub out unsatisfactory work long after the charcoal shall have been ground into the paper and worn away its "tooth" and become woolly. But if in the end he shall attain to something like correct form he may be content, and console himself with the reflection that artists have gone through it all in order to reach their present degree of accomplishment. The mystery of effect is a delightful study, which may be followed indefinitely after the mastery of form shall have been attained.

Work on a Large Scale.—A practice followed in our best art schools, and one highly commended, is that of working on a large scale—life-size, or even larger. For this work sheets of common brown wrapping paper are used, the softest charcoal, and a bit of chamois-skin for taking out lights. There is a reason for using the brown paper aside from its cheapness. White paper must be nearly or quite covered to bring it down in harmony with the strong blacks of the charcoal, but the tint of the wrapping paper may be allowed to stand for the high lights and the light middle tints of the subject, and the study thus confined to the deeper tones, which greatly simplifies and expedites the work. The more drawings one shall make the more one will learn, the eye and hand becoming trained in proportion to the work done, and time need not be wasted in mechanical finishing. In this broad, quick work the lines are carefully but boldly drawn according to the proportions of the object, the masses of shade are rubbed in, using the entire length of the stick of charcoal, and are afterward modified with the fingere or the palm of the hand. The chamois-skin is rarely used except for rubbing out parts that may need correction. This kind of work is strongly recommended to students working without a teacher.

The Paper.—The quality of the charcoal depends, in great measure, on the paper on which it is used. For rocks, foliags, and other coarse-grained textures, a coarse-grained paper with a good "tooth" will be required; for flesh, sky, and water a smoother surface must be chosen; absolutely smooth paper will not do at all, as it will not catch hold the particles of charcoal. Artists, however, often wish to combine the two extremes—rough and smooth textures—when they are obliged to resort to different modes of treatment on the same paper in order to produce the desired effect. The method most used is to choose a rather fine-grained paper, and work over the smoother surfaces with small chamois stumps, the fingers, or bits of soft bread, giving the

* The excellent article on page 655, by Mr. Charles Butterworth on how to employ the "rainy days," has called forth sundry requests for "further instruction." In response we have collated this article and the one following on painting, for the help of our readers who are ambitious to improve themselves in art.—Ed. P. P.

final modelling by careful stippling. The roughest parts are done with the charcoal only, used full length for flat surfaces, and modified slightly by stump work for medium textures. In the most spirited parts the broad point of a soft charcoal stick is used in vigorous cross-hatching, by which means admirably suggestive work can be done.

Methods not Recommended. — For anything more than a sketch or very simple study white paper should be used, the brilliancy and transparency of charcoal depending on the specks of white paper showing through the black or gray; and tinted paper, of course, lessens this effect in degree as its tint deepens. In studies and sketches this tint is useful, taking the place of lights and half-tones. The practice of indicating the lights with Chinese white is destructive to harmony and should be discouraged. Only in special cases is it allowable.

A little trick, especially useful in landscape, and which even artists of repute do not disdain to make use of, is that of burnishing down certain parts of the paper, the portions reserved for smooth surfaces, before beginning to work upon them. To do this well requires a great deal of practice, but properly done it is a great assistance, giving atmosphere to the distance and relief to the foreground. Another plan is to use fine-grained paper, and to roughen it where necessary with sand-paper or by a wash of Chinese white. But neither of these methods is recommended, the one giving a gritty appearance to the work, the other making it appear patchy, do what one will to harmonize it with the other parts of the work.

Application of the Fixative.—The fixative, which it is absolutely necessary to use with all charcoal work unless it be framed at once, is made of gum shellac dissolved in spirits of wine. The color should not be darker than that of pale sherry. Too much of it should not be applied, as in that case the transparency of the work would be lost. It is, indeed, almost impossible for a charcoal drawing to be "fixed" so that none of it will rub off without sacrificing the spirit of the work. A moderate application of fixative will prevent the charcoal falling off of itself and preserve it until it can be put under glass. In case it should be accidentally rubbed in any part it may be retouched vigorously. Some artists use the fixative before completing the work, strengthening the strong parts afterward, which is quite possible, as the fixative gives a new tooth to the paper.

The Best Medium Artists Possess.— As to the capabilities of charcoal, Mr. F. Hopkinson Smith, who has got to the end of his training in that line, considers charcoal the very best medium artists possess. Nothing can render flesh like charcoal, and for stuffs, glass, porcelain, landscape, and everything one sees about him, it is equally responsive to the artist's demands. A touch modified its texture; a breath will lighten any part or the whole drawing at once. When it is right fix it with the atomizer. Another strong point in favor of charcoal is that there is no waiting for a wash or a coat of paint to dry. All the time is profitably employed, the enthusiasm has no chance to die out, and the artist is enabled to make the most of an inspiration. But one must work, and work hard. Above all, he must learn when and where to stop. That is the great secret of success in charcoal drawing.

POINTS FOR AMATEURS ABOUT LANDSCAPE PAINTING.

The part of a landscape scene which has challenged recognition as foreground must, of course, be bold; and that which lies beyond it will furnish all that is necessary to complete the sketch. On a bright, clear day, to get the general effect of the scene before you nearly close your eyes, thus veiling the sight with the eyelids until the distance is nearly lost in obscurity. This will give the distance a far-away, hazy appearance, and that near by will, by contrast, seem to stand out in stronger relief, which is as it should be. A hazy atmosphere will produce the same effect without resorting to artificial means.

For the light, neutral tone required for the background take white, a very little Naples yellow and cobalt, mix well, and carefully deepen with ivory black. Terre verte and rose madder are to be added for the distance; then ochre, raw umber, and

whatever strong colors may be called for as the work progresses toward the foreground.

For the sky use broad, flat bristle brushes, beginning at the upper left-hand corner of the canvas. Give a short diagonal stroke from left to right, but constantly varying, so as to avoid a straight-lined effect, and incline the brush more and more in finishing the surface. Never use a blender. If it is desirable to bring the haze farther over the distance, the color may be spread out on the palette with the knife as thinly as possible, then, with a large brush held very upright, conveyed to the sketch with a dabbing touch.

For the foreground use warm umber tints, which will have the effect of relieving any bright colors that may be employed for the final accents. This practice is known among artists as sympathetic sketching, its aim being to secure the several values in a broad, effective manner.

In connection with it, practice cloud forms and foreground objects, such as rocks and trees. Many beginners do not realize the difficulties of painting a sky with or without clouds. If asked the color of the clear sky the answer is almost invariably "blue," and very few persons appreciate how little blue there is in the sky. The result is a crudeness in the sky of the average beginner that very effectually destroys any other good bit of coloring he may have achieved in other parts of the picture. Beware of making the sky too blue; it is far easier to deepen the tint by subsequent scumbling than to lighten it by any process short of repainting.

In the preparation of sky-tints, it is to be observed that they are graduated in intensity by a greater or less proportion of white, and in laying them on we place the strongest of them at the highest part of the sky, making them paler and less intense as we descend toward the horizon, where the use of the blue tint is discontinued and other tints in keeping with the character of the picture substituted. The same principle is true in this respect, that the tints are brightened as we approach the parts nearest the sun.

The tints, however, are varied from the horizon to the zenith, or the highest point of the picture. In the representation of a sunset, for example, the blue of the zenith may be united with the yellow and orange of the horizon by different connecting tints, as in the transition from blue to violet; then to the rose tints, the latter verging to the horizontal orange and yellow. In another kind of evening sky the transition may be from blue to violet, and from violet to light orange.

The sky tints of the horizon vary greatly, but in general, for a peaceful sky the most harmonious of flesh tints may be safely imitated provided they be modified according to circumstances—at one time rendering the tint more rosy, at another giving it a yellowish cast, at another a greenish hue.

In painting a sky, however, the main difficulty lies in giving it an aërial appearance—the sky of the experienced amateur appearing generally like a painted sky and nothing more, with no atmosphere between the observer and the mass of paint. To preserve an aërial appearance the sky should be painted with few colors; but there should be as many gradations of these colors as possible.

Paint the sky in at once; if two paintings are required, the first should be lighter in tone than it is intended to be at the second painting. The colors usually employed for painting skies are: French ultramarine, madder lake, aureolin, yellow ochre, Naples yellow, and raw umber. Vermilion and Indian red are sometimes added to this palatte, but they must be handled very cautiously, as they are heavy colors, and a little excess of either will destroy the aërial hues of a sky.

Thin, floating clouds are laid lightly on the fresh under-tint with a very pliable brush; more positive ones may be imparted with the palette-knife. For light clouds the the tint chiefly required is violet-gray, composed in varying proportions of French blue, light red, white and yellow ochre. For very rosy clouds, use Naples yellow with vermilion or madder, according to the tones indicated. For sombre clouds, substitute Indian red for the vermilion or madder. When the clouds appear yellow-reddish in tint, use yellow ochre in combination with other colors, and in varying proportions.

Those sides and borders of clouds which reflect the light of the sun, are to be laid in warm horizontal tints. For this purpose use at one time vermilion, at another Indian red, at another light red, and, again, madder lake, being in all cases careful not to carry the gray of the clouds upon the luminous portion. If the purplish tones of the gray prevail, add the orange tone to the Indian red and blue. It is of importance to place the warm clouds with distinctness and clearness upon the blue ground, so that while the blue of the sky may partake of the light gray of the clouds, the crispness with which they are put on may bring them sharply and brightly out. In order to give the requisite solidity and brightness to the high lights of the clouds, these lights must be laid on with stiff color, having very little medium in it.

A little delicate cool gray is also to be given to the shadows of the light clouds, but this must be done with only a small quantity of the vehicle; after which the softener must be gently drawn over the lights and half lights. Spread a layer of the azure color upon the palette with the knife, then press gently the points of a clean softener upon it, and with it touch softly the dark portions of the clouds, slightly uniting them with the dark vicinity of the sky. Then with a clean softener blend the cold tints on the surface without disturbing the color underneath. Carefully done, this process will produce a beautiful harmony with the azure, and will also give a luminous character to the interior of the clouds. The too free use of the blender will, on the contrary, render the underneath color opaque.

Generally clouds may be painted on the sky while it is yet wet, and may be united with it by slightly softening the edges. But w ere the lights of the clouds are to be made with sharp, well-defined edges, these lights may be best produced by being placed when the first flat painting is quite dry.

The study of clouds is no insignificant subject. Many artists claim that they paint their skies wholly from memory, but it is to be assumed that if they paint them successfully from memory they could do equally well from nature. Much may be learned of the forms of clouds from the study of instantaneous photographs, but it is safe to say that the best skies in painting are done in a rather summary fashion. With fine weather clouds the sketcher must be content with a mere indication of the form of each particular cloud.

"When the rainy days come and the work stands at a dead lock, instead of playing cards, or fuming through the gallery making everyone miserable, as well as yourself, if you will take up your copy of Burnet's *Essays on Art* and study it systematically, you will soon find yourself intensely interested, the time will pass before you are aware of it, and all the while the foundation of the knowledge on which you are to build your future reputation will be broadened and strengthened." — CHARLES BUTTERWORTH.

PHOTO-MECHANICAL PRINTING.

BY D. WINSTANLEY.

THE numerous examples of photo-typographic printing which the readers of the *Photographic News* have had placed before them clearly demonstrate two facts—the one that it is quite possible, by such processes as are now in use, to render half-tones by photo-mechanical means, in aggregations of dots which appropriately vary in their number or their size; and the other that these results are produced with great uncertainty.

The theory of the subject as thus far published to the world is manifestly deficient, or manifestly wrong. It does not account clearly for the results obtained, and, as a guide, it does not suffice for their certain reproduction. I doubt very much if the true theory of photo-mechanical printing in opaque inks is known at all, even to those who get the best results, for their descriptions of the processes they employ do not account for the quality of the prints they obtain with moderate frequency, nor do the specifications of their patents claim that which is really essential; they do not deal with the "pith and marrow of the attribute," but only with the "limbs and outward flourishes."

On page 338 of his recently published and excellent work on photographic and

photo-mechanical printing, Mr. W. K. Burton says: "It is difficult to account by any theory for the fact that the mere breaking-up of an image by introducing a grain gives the effects of half-tone by a process in which any one point must be represented by either black or white; and probably, "he continues, "the success of the process depends on certain factors—diffraction of light, perhaps, for example—which have not yet been considered in connection with it. At any rate, we have nothing to do but accept thankfully the fact that the result is a very fair representation of half-tone."

Apropos of the grained screen ussd as far back as 1866 by Messrs. Bullock, Mr. Burton says (same page): "The only thing in the way of a novelty which has been introdvced is the modification of Meisenbach, who introduces an arrangement whereby the grained screen, during the exposure for the reproduction of the final negative from the transparent positive and this screen, is slightly moved once or oftener, so as to still further break up the grain. At first sight it would appear that such a movement was the one thing necessary to make the reproduction ofhalf-tone as black and white grain absolutely hopeless; but here, again, if we can judge by some of the effects obtained by the Meisenbach process, theoretical reasoning is at fault."

On page 21 we have it that "the truth would appear to be that in the case of all the processes" (photo-mechanical ones) "excepting that of Waterhouse . . . . a discriminating grain has been produced rather by accident than by the design of the inventor."

On page 20 we find that "the firm of Goupil et Cie have long been famous for the remarkably fine photo-engraving they produce," but that "the precise process used has been kept secret."

On page 21, however, Mr. Burton makes an observation which shows he has a vague notion as to what it is which causes a discriminating grain to be produced when an undiscriminating grain screen is photographed in conjunction with a transparency for the final negative. He says: "It was pointed out in the case of Talbot's improved process how a discriminating grain was produced by the lateral action of the etching fluid. Besides this there is to be taken into account the results of what has been termed the 'creeping action of light.' This is in reality a lateral action of light. When light acts on a film of any appreciable thickness, the action tends to spread sideways to a less or greater amount, according to the intensity of the light or the time that it is allowed to act." This "lateral action of the light" Mr. Burton then endeavors to explain by reference to a wood cut, and by an argument which I respectfully submit entirely fails, and then (on page 22) he suggests that "there may be a slight spreading action of the ink itself" in printing. "Thus," he continues, "if two lines be engraved or etched on a copper plate, both of the same width, but one considerably deeper than the other, the deeper line may print out broader than the other."

From these quotations it is evident that Mr. Burton (and we have not many who are better authorities) agrees substantially with my proposition that "the theory of the subject as thus far published to the world is manifestly deficient or manifestly wrong." It is evident also that he is not well satisfied with his own hypothesis of the "lateral action of the light," and both these points are rendered more evident as he proceeds further in his book. On page 22 (the page immediately following that on which the "lateral action hypothesis is propounded") he says: "It must be confessed that it is very difficult to see how the result is brought about." And on page 28 this opinion is reiterated with some emphasis. He there says: "Of all these processes" (the stippled screen ones), "the same thing may be said. It is very difficult to see how they succeed at all. At first sight it would appear that they ought to fail, because, considering that a block can only, at one point, print quite black or quite white, it is difficult to see how any half-tone is to be got from a pattern consisting of dots of equal size at equal distances, or of lines of equal breadth at equal distances. There is nothing in all this of the nature of a discriminating grain. Still the processes are more or less successful." I have a considerable number of Meisen-

bach productions before me as I write, and the following words of Mr. Burton's (page 29) are accurately descriptive of them: "If one of these be examined by the aid of a powerful magnifier, it will be found that the image in reality consists of equidistant dots. In the highest lights these are, of course, quite absent; but in all other parts they are present. In the lightest shades, however, they are represented by the minutest points, whereas in the shadow they are so large as to run into each other."

Having thus described these points, Mr. Burton again reverts to the "creeping action of the light," but he is sufficiently dissatisfied with that singular form of action to express a doubt as to the prints being really obtained by the method described in connection with them—a method by which, in his opinion, that action or some other akin to it is involved.

These are the words he uses: "If Meisenbach really produces the excellent result that he obtains by the method that he patented, one can only conclude that the discriminating grain results from the 'creeping action of the light' already treated of."

My object in the present article is to show that the Meisenbach results may be obtained by the process Meisenbach as it has been described, that they are not the result of any "creeping action" or any "lateral action" of the light, that the claims made by Meisenbach in the specification of this patent, and which are substantially for the movement of his granulated or stippled screen, do not touch the pith and marrow of the attribute, but merely add to the tediousness of its limbs and outward flourishes. It is my purpose to point out a clear and rational theory of grain discriminating, to show how it comes to pass that there is at present so much uncertainty in the production of satisfactory results, to show how the uncertainty may be avoided, and to pave the way for a vastly extended area of usefulness for the processes of photo-mechanical printing.

It was my fortune to be in the service of the late Mr. Walter Woodbury some twenty odd years ago—*i. e.*, in the early days of the beautiful process which now bears his name. At the time I speak of, none of the Woodbury reliefs were sharp. They were produced beyond the focus of the condenser of a heliostatic camera by the operation of the solar rays. Mr. Woodbury was in the habit of describing the solar rays as "parallel," and he accounted for the "bluntness" of his reliefs by what I then described as the "superstition" that there is such a thing as the "creeping or lateral action of the light." Now, if it were a fact that light did "creep laterally, as the acid used in etching a plate creeps, and if it were further a fact that "the action tends to spread sideways to a less or greater amount according to the intensity of the light, or the time that it is allowed to act," it would also be a fact that the effect of the stippled or granulated screen would be to produce the gelatine picture in a series of points with their bases toward the negative, which is contrary to Mr. Burton's reasoning on his page 21, contrary to the diagram used to make his reasoning clear, and contrary to the fact as evidenced by the prints. Let the two thick black lines in Fig. 1 represent a plate of

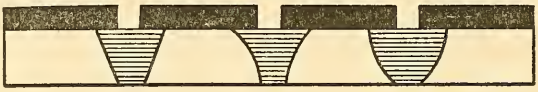
Fig. 1.



metal, and the space which separates them a hole which has been drilled therethrough. Also let the space beneath represent the bichromated gelatine film. Let us suppose the metal side of this combination to be exposed to light. Clearly the light will be most intense immediately beneath the hole, and least intense at the opposite side of the gelatine film, and, accordingly, any lateral action there might be, any action "tending to spread sideways," would be most intense just beneath the hole, and grow less intense as the distance from the hole increased, with one of the results shown in Fig. 2. A truncated point of insoluble gelatine would be produced with its base toward the exposure surface, and the sides of this point would be straight or curved, and if curved, be inward or outward according to the quantitative relations of the "action sideways." The clearer the portion of the

negative operated on, the deeper would be the points, and the wider would be their bases, and the result of a piece of shading

Fig. 2.



would be analogous to what is seen in Fig. 3, in which the heavy black lines show the opacity of the granulating screen, and the shaded spaces bounded by the thin lines the gelatine rendered insoluble by the direct action of the light and by its hypothetical creeping sideways.

Fig. 3.



This result is the opposite of what Mr. Burton expected to get. It is substantially the reverse of what is shown in the diagram on his 21st page, and it is analogous to the configuration assumed by the pointed wires used in the process Winstanley, as described in the *Photographic News* on the 19th of October, 1866, over twenty-one years ago. It is, however, not the result desired in the process Meisenbach, or any others in which grained screens are used, and it is not the result obtained by them, but its antithesis. The hypothesis that there is a "creeping action of the light," a "lateral action working sideways," is, so far as my knowledge goes, unsupported by any evidence. Truly, light may be refracted, reflected, dispersed, or diffused by suitable means, but in the instance of a film of gelatine mixed merely with a salt of chromic acid I fail to see these means.

I am quite aware that in the case of carbon printing the "insolublizing" action started in the light is continued in the dark. It was to this action that my friend, the late and unfortunate Mr. William Batho (who died in India just when his worldly prospects were, for the first, good), gave the infelicitous name of "the continuating action of the light;" but I am not aware that even this action is one which has a proclivity for acting "sideways," though I should not be surprised to learn that in this instance such an action is a fact.

What does take place, however, in the case of the process Meisenbach. in the case of the process Mosstype, in the case of the process Bemrose, and in the case of every process in which grained screens are used, is this: when the negative, with its film beneath, is exposed to the diffused light of day, the rays passing through the various optical apertures which constitute the grain naturally diverge beyond, and produce in insoluble gelatine, a series of cones with their points, and not their bases, toward the negative and granulator side, as seen in Fig. 4, and thus give us, when the washing from behind has been effected, a picture consisting of dots, equal in number on equal areas, but differing in size in proportion to the lights and shades of the photographic negative employed, the dots being largest where the glass is clearest, and where, consequently, the light has penetrated to the greatest depth, and the divergence of its rays been most wide. Here, obviously, the broad ends of the cones will touch, and give

Fig 4.



continuous blackness in the print. Obviously, the angular divergence of the penetrating rays will increase with the apparent magnitude of the source of light by which the printing is effected, and with a wide angle of illumination the gelatine reliefs will be more shallow, and on that ground more difficult to print from. On the other hand, a narrow angle of illumination will give a deeper relief, but a more undulating surface. The undulating surface is a theoretical objection; the shallow relief is a practical one, and probably the happiest mean would be attained when the angle of illumination is from forty degrees to sixty degrees in magnitude.—*Photo. News.*

THE LICK OBSERVATORY.

The astronomers never tire of expatiating on the excellence of the mounting of the great telescope. In most essential points the mounting is regarded as unsurpassed, and in its constant use the astronomers have already had reason to congratulate themselves on the advances made in the details of such structures since the time that Herschel and Rosse began their experiments in this direction. The adjustment is so perfect that little effort is required for necessary changes in position. A pressure of ten pounds on a hand-wheel at the top of the great pier moves the whole telescope quickly in right ascension, and for the corresponding motion in declination about twice that pressure is sufficient. In right ascension movements over 28,000 pounds are moved, and in declination over 14,500. A less pressure, it is noted, is required for the greater weight; this is due to the comparative difficulty in reaching, through angles, etc., the declination axis. The entire telescope and mounting weighs 81,520 pounds.

All the astronomers are delighted with the twelve-inch equatorial telescope. Director Holden considers it one of the most perfect instruments in the world. It was formerly owned by Dr. Henry Draper, of New York. Mr. Barnard, who has this glass in charge, has shown by a series of experiments that this is capable of producing photographs of exquisite sharpness. This is regarded as an unexpected endowment for the observatory —a new instrument of great excellence for photographic purposes. There is, of course, besides this, the large 35-inch photographic lens for the large telescope. In making the 12-inch equatorial of value for photographic purposes, it is calculated that Mr. Barnard has increased the value of the observatory's equipment by fully $5000.

In photographic work there has been excellent results. In the long focus of 49 feet of the large equatorial the images are so represented that the moon appears more than five inches across. It is easy to enlarge these views from six to ten times, so that portions of the moon can be seen on a scale that would make the moon's diameter in proportion fully fifty inches. Exposures are practically instantaneous in the bright objects, such as the moon and larger stars, but for the fainter stars exposures of one or two hours are often necessary. The stars in their courses must be followed at these times, and for this purpose provision has been made for attaching the twelve-inch telescope alongside the larger one to serve as a pointing telescope. This attachment can be arranged easily without delay.—*San Francisco Bulletin.*

THE WORLD'S PHOTOGRAPHY FOCUSSED.

Mr. H. P. Robinson has obtained another gold medal for his splendid picture "Carolling," at the exhibition recently held at Cardiff, England.

The Photographic Society of London issues a catalogue number of its recent exhibition. We can hardly conceive such a thing as the exhibition of our P. A. of A. being arranged sufficiently ahead of time to print a catalogue.

We regret to learn that Mr. W. F. Donkin, M.A., the popular Secretary of the Photographic Society of Great Britain, and his friend, Mr. H. Fox, together with two Swiss guides, have met their death in the Caucasian mountains. They were on an exploring expedition together, but their whereabout cannot be found. Photography has met with a sad loss in the death of Mr. Donkin.

We learn that our old friend, Mr. Lake Price, is to deliver a lecture before the Camera Club on *Art Culture in Photography*. We rejoice over this, and shall endeavor to post our readers upon what comes from this distinguished source. Mr. Price at one time gave us one of the best works that was ever written on photography, in his *Photographic Manipulation*.

The Book of the Lantern is the title of a new work just issued by Wyman & Sons, edited by Mr. T. C Hepworth, F.C.S. We shall hope to review this presently for the information of our readers.

A curious case has been settled in England recently. A photographer in London complained that a neighboring hospital was a nuisance to his business. The court decided against the hospital, but the case was appealed, resulting, however, in the confirmation of the first decision. The hospital was moved away from the photographer.

A grand exhibition of photography is to be opened in Moscow on the 26th of December, and to continue open until the 15th of March. It is expected that no less than 160 medals and other awards will be given. The personal influence of the Grand Duke Alexis is given to this enterprise, and some grand results are expected.

So great has the public love for photography increased, that it is a common thing now for the subscribers to magazines illustrated by photography to receive their numbers minus the picture; and in some libraries magazines thus illustrated are only loaned under the charge of a custodion. Blessed photography!

The last number of *The Camera* contains a very interesting article on stellar photography, by Prof. C. Ray Woods, of the Royal Observatory, Cape of Good Hope. It is illustrated by views of the southern cross and of the great comet of 1882.

The societies abroad are meeting with great success this year, and some of them are as busy as a wasp's nest. The great trouble with many of them seems to be the difficulty of forming and adopting proper rules for the regulation of their august bodies. We have known many such organizations in this country to die from too much "constitution;" but it may be that such a thing could not occur in Europe.

Hospital Albums.—Have any of our readers ever projected a plan for supplying the hospitals in their neighborhood with albums of photographs, for the instruction and entertainment of the poor unfortunates who are obliged to remain is these institutions? It is quite an affair of pleasure with our friends abroad, and our own gentlemen and ladies of leisure, who love the camera, would find pleasure in following suit, we are sure.

Stereoscopic photography continues to excite a good deal of attention in the old countries. We believe there was a considerable revival in America during the past summer, and we shall look presently for proofs from some of the negatives. Who has tried the double lens recently?

A PAGE HISTORIC.

Sometimes we look our business friends in the face for a quarter of a century, and have many pleasant and profitable transactions with them, without even so much as wondering if they have ever done a noble deed or performed a public act that did them honor. We know of many a one engaged in the service of our art who has quietly performed what the world would applaud, if modesty did not hold up so dense a veil between the parties of the first and of the second part.

This train of thought is started by a series of photographs at our hand, from negatives made by Dr. R. W. Wilcox, of this city, of the historical battlefield of Antietam, and of accessory views. They are from $6\frac{1}{2}$ x $8\frac{1}{2}$ plates. Photographically, they are very fine, and in some cases very picturesque. The series includes the battlefield at large, right and left; the Roulette house and barn which covered the 132d Regiment Pennsylvania Volunteers, when they approached the Confederates; the old deep cut, fence-protected road, occupied by the Confederates when the attack was made, and one of the

Everhardt mansion, to which we shall allude again, presently.

A charge at Antietam was led, September 17, 1862, by the 132d Pennsylvania Volunteers. It was headed by a gentleman whose name is a household word among photographers everywhere, Col. Vincent M. Wilcox, of New York, Vice-President of the house of E. & H. T. Anthony & Co., No. 591 Broadway.

On 17th of last September, the first reunion of the survivors of this gallant regiment was held at Danville, Pa., on which occasion their honored Colonel addressed his comrades. Afterward he repaired to the scene of the struggle with his son, Dr. Wilcox, and the photographs were made. Since their receipt, Col. Wilcox has favored us with a copy of a handsome volume containing his address above alluded to; his report of the battle written upon the field immediately after; a recital of the Colonel's military record, and what General Walker has said in his history of the Second Army Corps of the part taken in the battle of Antietam by the brigade to which the 132d was attached, together with the history of that regiment, and a list of the killed and wounded. The work is illustrated by a photogravure portrait of Col. Wilcox, cabinet size, taken in full uniform, by Chase, in 1862, and another view of the road mentioned, taken by Alexander Gardner, with the Confederate dead as they fell before the fire of the 132d. A copy of this work is to be presented to every surviving member of the regiment.

The series of views is supplemented by a very picturesque one of a house where Col. Wilcox was sick for some four weeks. Of this he says:

"It is at the foot of Loudoun Mountain, on the west side of the Potomac, south of the Shenandoah river, W. Va. During the time I was there the Union pickets were driven in, and I was within the Confederate lines. The lady who took care of me, with my orderly-sergeant, was very much frightened, because she was secreting a Union soldier, and, fearing she might be arrested, hid my uniform; and finally she sent for a miller, whom the Confederates and Union people both protected on account of the services he rendered in grinding corn for the soldiers, to help her out. He was a Confederate, but was very kind to me, and did all he could to secrete me, and was successful. When I got better, he would come over to see me, and I used to put my arms around his neck and that of my orderly-sergeant, and walk across the room, back and forth. He had a good heart, and would bring chickens to me when I got so that I could eat anything. I forgot to say, that as soon as Gen. French found that our pickets had been driven in, he called out my brigade and drove the Confederate pickets back, so that I was again in the Union line."

"I was brigade inspector the day after the battle, and as I came to the 7th Pennsylvania regiment I found that they had English rifles. I remembered that at my last inspection of the brigade they had Austrian rifles, which our government had to take up with as they could not get guns fast enough to equip our volunteers. I said to the officer in command of the regiment, 'Where did you get these guns?' He said, 'We exchanged them yesterday with the dead in front of our brigade and gave them our Austrian rifles, which are good enough for them now; and, smiling, added, 'they made no objections.' The regiment was small, but every man had secured a good Enfield rifle from the Confederate dead."

The Colonel accompanies the picture by a recent letter from Mrs. Everhardt, who, with her husband, befriended and secluded him when he was ill. In this she recalls many pleasant incidents.

And now comes the sequel of all this, in the handsomely printed book alluded to. The portrait frontispiece brings back vividly the memories of the dark-haired young man whom we met soon after our magazine was born. His present portrait shows some changes, but the two faces show the same kindness of heart—the same twinkle of the eyes. There is no loss.

In his late address, Col. Wilcox said, among other soul-stirring things:

"Fathers, mothers, brothers, sisters, and children, have mourned the loss of many gallant heroes who gave their lives twenty-six

years ago upon the battlefield of Antietam. Joy and sorrow alike claim our remembrance of them on this anniversary day.

"The sacrifices made on that eventful day have been repeated again and again in song and story. The same patriotic spirit that actuated the brave soldiers of the 132d regiment to volunteer to defend our common country when her suffering cry of injured liberty was borne upon the wailing winds, clearly was shown on the battlefield of which we commemorate to-day. The roar of the thundering gun that sent forth smoke and flame with missiles of destruction, or the volley of musketry that scattered among the living lines the dying and the dead, only made you more determined to do or die, and of you I can say that you never faltered, and the heroic deeds of valor on that day, both of officer and private, which were witnessed by many that are here, are deeply engraven on our hearts, and will never be effaced so long as the weary wings of time continue to unfold.

"You will recollect the day before the battle, when we were in camp in a valley under protection, and General McClellan and his staff rode past us on the eminence in front of the lines, which drew fire from the enemy, and how the new soldiers, our regiment among the rest, ducked their heads when shot and shell went over us. But, the next day one of these brigades was on its knees, not praying, but firing, at the sunken lane near Roulette's house.

"No doubt many of you have heard repeated over and over again, what General Kimball said when I reported to him that we had fired all our ammunition, and that the cartridges which we had taken from all the dead and wounded had been distributed, and when I asked for orders, the orders came to fix bayonents and charge the enemy, which was done with a gallantry which has been referred to by historians, who have given us great credit for the bravery then shown under the most trying circumstances.

"Nearly a quarter of a century has passed since the struggle was ended, we trust forever, and since peace and liberty and equality have been secured both to the North and South alike, the conqueror and the conquered. Both recognize the flag of our country as the symbol of freedom, which was secured by the patriotism, blood, and the treasure of this beloved republic. This is recognized in every civilized nation of the world, and wherever this flag is borne upon our ships on the waters of the globe, it is respected and honored, and when this broad banner is unfurled to the breeze on land or sea, it is the emblem of the land of liberty and the home of the free."



Col. Vincent M. Wilcox.

Military Record of Vincent M. Wilcox.

In the book entitled *The Martial Deeds of Pennsylvania*, by Samuel B. Bates, is recorded the following on page 718:

"Vincent Meigs Wilcox, Colonel of the 132d Regiment, was born at Madison, Connecticut. He was the son of Zenas and Louisa (Meigs) Wilcox. His boyhood was spent upon the farm, and he was educated at Lee's Academy, in his native place. For some years after leaving school he was engaged in teaching. He was married in 1856 to Catharine M. Webb. He became an officer in the State Militia of Connecticut in 1856, in which he displayed considerable enthusiasm.

"Having become a citizen of Scranton, Pa., upon the formation of the 132d regiment he was appointed lieutenant-colonel. In the battle of Antietam, Col. Oakford, who led this regiment, fell, and the command devolved upon Lieut.-Col. Wilcox.

It held a position of great importance, inasmuch as it was the key to the Union position. The line had been broken in other parts, but if this could be held there was a chance of regaining the portion lost. In the crisis of the battle Col. Wilcox received orders from Gen. French, who commanded the division, directing him to hold the ground to the last extremity; but the ammunition had all been expended. By searching the bodies of the dead a little was obtained, which was economically used. When that was gone the Colonel reported the fact to Gen. Kimball for orders, but instead of being relieved, he was ordered to fix bayonets and charge, which was executed with the utmost gallantry, driving the enemy before him and capturing a colonel and several men. The battle raged long and fiercely, and the loss among his men was very great, but he exercised his responsible duties with skill and fidelity, holding his position against powerful assaults made by the veteran foe.

"At the close of the battle he was promoted to colonel, to date from the day of of the engagement, as an acknowledgement of his merit. His service though brief, was marked by a full measure of devotion, and contributed not a little to the fortunate result of the campaign."

A PERFECT SUBSTITUTE FOR GLASS AS A SUPPORT FOR GELATINE BROMIDE OF SILVER FOR USE IN PHOTOGRAPHY.*

BY JOHN CARBUTT,
Wayne Junction, Philadelphia.

No sooner had the gelatine dry plate process become established, displacing by its greater sensitiveness and convenience the old wet and dry collodion method, than experiments were commenced to find a suitable substitute for glass, the weight of which has proved a great inconvenience to travellers, with the dread always present that their exposed plates or negatives might get broken; a dread, in many instances, only too painfully realized. Before proceeding to describe the material I have found to be a perfect substitute for glass as used in photography, I will briefly pass in review a few of the substitutes suggested and made use of, and note the objections to them.

In 1880, M. Ferrier, of Paris, patented a compound film of gelatine and collodion. The objection to this film was the unequal expansion of the gelatine and collodion, causing the latter to crack.

H. J. Palmer, M.A., of Liverpool, in 1881, proposed a film of gelatine and ox-gall, with a second film of plain gelatine.

Stebbing, of Paris, produced gelatine bromide films on a pellicle of gelatine. Both this and the Palmer film proved defective from the liability of the film to expand while in the developing solution, sometimes to nearly double the area of the dry film.

Warnerke, of London, produced films of alternate layers of rubber and collodion.

Pumphrey, of Birmingham, as early as 1882, produced films on paper.

Morgan & Kidd, of London, coated paper for bromide enlargements, and the same was used for paper negatives, but the grain of the paper proved objectionable.

The late Walter B. Woodbury devoted a great deal of time in trying to produce a transparent paper as a support, when death overtook him. His partner, Vegara, took it up, and finally placed such films on the market, only to be shortly withdrawn, to be replaced by a film of hardened gelatine, the invention of F. C. Froedman, of Dublin. His method consists in mixing bichromate of potash with gelatine, spreading on glass, drying, exposing to light, washing in plain water, then bleaching in a dilute solution of sulphurous acid, again washing, drying, and coating with sensitive emulsion. The objection to this film is its extreme limpness when wet, and propensity to assume any shape but a flat one on drying. These were followed in America by the Eastman Company's paper negative, made transparent with castor oil, and while printing quicker than paper unoiled, the objectionable grain of the paper marred the result.

Next we have the stripping film of the same company, which up to the present

* Read at the stated meeting of the Franklin Institute, Wednesday, November 21, 1888.

time has proved the best substitute for glass, although in many instances the grain of the paper shows in the finished negative. The objection made by users of this material is the great risk of loss of negatives in the after-process of stripping the exposed film from its paper support and the time occupied in the same. I will read from their instructions as published in *Science of Photography* (vol. i. pp. 11, 12):

"*Stripping.*—Take as many sheets of glass as you have negative to strip, each one a size larger than the negatives. Clean, and, when dry, coat with a rubber solution, which can be either bought already prepared or can be made as follows:

"Rubber Cement . .	1 ounce.
Benzine	9 ounces.

"Place the plates in a rack to dry until 'dead,' which will take about five minutes. Then flow with the following solution:

"*Plain Collodion.*—

"Ether	1 oz.	0 gr.
Alcohol . . .	1 oz.	0 gr.
Gun-cotton . . .	0 oz.	10 grs.

"As soon as set wash under the tap until the greasy lines disappear. This is to remove the ether and alcohol. Then place the glass in a tray half-full of cold water, keeping hold of one end with the left hand. Put the negative into the dish face down, press under the water, and guide the end nearest the hand holding the glass, so as to clasp the negative with that hand, then raise the *end* of the plate out of the water, thus allowing the water to carry the air from under the negative. Squeegee the negative down, which should be done with light pressure for the first few strokes, and then put it under blotting-paper with another sheet of glass over that, and a weight of say eight or ten pounds on it. Allow it to remain under pressure for ten minutes. Now take a tray half-filled with warm water at a temperature of about 110° F., or such as will feel comfortable to the hands. The directions sent out with the films, saying to use water at 120° to 140°, I have found to be much too hot.

"Place the glass plate with the negative thereon into the warn water, and, after gently rocking a couple of minutes, try one corner by picking it up with finger-nail or a pin. If it does not start readily do not try to hasten it, for as soon as the water has softened the substratum the paper will come off easily. After the paper is removed raise the plate from the water, wash off the remaining soft gelatine with a tuft of cotton or a camel's-hair brush dipped in warm water, and set the plate in a rack to cool. Do not change from the warm water to the cold too quickly, as a sudden change of temperature will frill the gelatine.

"After the negative is cool place it in a pan of cold water, holding the fingers under one end of the plate. Take a gelatine skin and slide into the water, smooth side down. Clasp the end of the skin with the hand holding the glass, and with the other hand press the skin under the water. As soon as the skin is immersed raise the end of the plate slowly, which allows the water to carry the air from between the skin and negative.

"In placing the skin on the negative do not allow it to remain in the water more than thirty seconds or a minute, as the water will soak out the glycerine, and the skin when dry will become brittle. To avoid this tendency it is well to put about ten per cent. of glycerine into the water used for that purpose, or perhaps better yet is a solution of equal parts of wood alcohol and water, which may be kept in a bottle and used from time to time.

"With a wet squeegee go over the skin carefully until all the wrinkles are removed, when allow the negative to dry thoroughly, and flow with plain collodion. As soon as this is dry, cut around the edge and peel from the glass. The rubber adhering can be removed with a tuft of cotton dipped in benzine.

"The negative, when completed, has a coating of collodion on both sides. This forms a protection against moisture, and gives the negative greater flexibility."

The substance I have the honor to bring to your notice to-night is thin sheet celluloid, manufactured by the Celluloid Manufacturing Company, of Newark, N. J.

It is some three or four years since I first

examined into this material, but the manufacturers had not then perfected the finish of it to render it available, and it is only during this year that it has been produced uniform in thickness and finish, and I am now using at my factory large quantities of sheet celluloid $\frac{1}{100}$th of an inch in thickness, coated with the same emulsion as used on glass, forming flexible negative films, the most complete and perfect substitute for glass I believe yet discovered on which to make negatives and positives, and without a single objection belonging to the substances previously enumerated.

The flexible films have been thoroughly tested in taking portraits, landscapes, and interiors. For the latter they are far superior to glass dry plates, as owing to the fine matt surface bearing the emulsion, halation is obviated.

Its weight, as compared with glass, is as follows: Twenty-four 5 x 8 flexible films weigh 7½ ounces, while twenty-four 5 x 8 glass dry plates weigh from 110 to 120 ounces, and its great merit does not alone lay in its lightness, toughness, and flexibility, but in that its treatment in development, etc., is precisely that of a glass plate; there is absolutely no after-process required. When the negative is washed it is hung up by a spring clip to dry, and is then ready to be printed from, and, owing to its thinness, can be printed from the reverse side, if the precaution is taken to use only vertical rays.

Makers of photographic apparatus are already producing light-weight holders to carry these films, and I have no doubt magazine holders will be produced in which thirty to fifty films can be carried and exposed.

I have here several negatives made by professional photographers of this city, and prints from the same; the portrait by Mr. Gutekunst, the landscape views by Truscott, the flashlight groups by Rothengatter & Dillon, and the 8 x 10 transparencies, are on films coated with my transparency emulsion, while the lantern slides that will now be shown you are from film negatives on lantern transparency plates, both by contact and reduction in the camera. This exhibit, I think you must concede, demonstrates that all can be accomplished on flexible films that has been done on glass plates.

AN IMPORTANT ART OPPORTUNITY FOR PHOTOGRAPHERS.

Every aspiring art student will remember that one of the first things told him by his books and by his teacher, was to "study the old masters." The result of that injunction, usually, was to place him in a predicament very much similar to that of the small boy who was told that if he would "put salt on a bird's tail he would catch the bird." One bit of advice was about as easy to follow as the other, simply because the galleries of the old masters are not available to the large bulk of art students, certainly not so to American art students. Nevertheless, since Mahomet cannot go to the mountain, the mountain is coming to Mahomet. Strange as the coincidence may appear, photographers are to have the advantages of the old masters brought to their very doors by their own wonderful and useful art. The work of transportation has been going on for three or four years. The *Century* Company, with its customary foresight and enterprise, has had Mr. Timothy Cole at work among the galleries of Europe, making from the original paintings, drawings, and blocks that are to be used for the reproduction of the world's best pictorial art, and engraved for the pages of the *Century* magazine.

The engravings of Mr. Cole are to be accompanied by historical papers from the pen of Mr. W. J. Stillman, the well-known art critic and amateur photographer. Mr. Stillman's contributions to photographic literature have made him well known to our craft for many years, and we are quite sure that our art-loving readers will eagerly follow him in this new work. The beginning of this splendid enterprise occurs in the November number of the *Century*, thus starting with the new volume, and will continue for several years to come. But few numbers of the *Century* are to be issued without several reproductions from the best of Italian art works, and in order that the fullest educational results may be derived from their publication, they will be printed

in historical order. Therefore, a grand treat is in store for all readers. We hope, we are sure, that ours will not neglect such an opportunity. What Mr. Stillman says in his introduction is true, as follows:

"COLE AND HIS WORK.—The popularization of art in our day has the radical, indeed vital, difference from that of any previous time, that it rests on the doctrine that truth to nature in some shape is the standard of excellence, and that what everybody can see is what anybody must represent. The history of art is full of records of popular enthusiasm over some work which met the ideal of the day—a result always possible when that ideal was one of art, but which is no longer possible since nature has been recognized as the standard; because if any one be capable of enthusiasm over nature, it is not on the copy that the enthusiasm will descend, but on the ever present and more vivid original. Nature does not, *pace* Leonardo, ask any one to hold up a mirror to her, for her glory and perfection are beyond all forms of reflection. The human mind—so far at least as it has been subjected to the process of civilization—has become awakened to the reality and importance of nature, and the emotions which are derived from her, and in the same degree has become insensible to art and its enthusiasms." This seems to be a necessary stage in human development. The race cools to the whole range of poetic emotions as it grows older in progress. To maintain the sensibility to these requires a special and conservative culture—a conservation in the individual of the uncalculating ways and improvident mind, which characterize the the true artistic temperament; but to the race in general, in proportion as it develops to the modern ideal of progress, even in the better sense, the entire range of artistic, *i. e.*, emotional, faculties are yielding place to the rational and scientific; and the redevelopment of art in the sense in which it was known in its golden ages is no longer to be hoped for.

"To us in America, removed from the facilities of the great galleries, and still further removed in spirit from the temper out of which all great former art has sprung, the early masters of art can never be as popular as Meissonier and Bouguereau are popular; but what good we can get from them we must get through reproductions, and these reproductions must be made in the spirit of the originals, in the same reverence and unfaltering conscientiousness.

"The undertaking to which *The Century* is devoting its resources, in the series of works on which Mr. Cole has been for several years engaged, is, therefore, in the widest sense of the term, a great educational work, and one than which the head of our school of wood-engravers could find no more profitable object for the devotion of the best years of his life. For such work, on a scale which permits popularization, there is no method comparable to the work of this new school of engravers. In Mr. Cole are combined the firm and unerring hand and subtilely trained eye which give consummate skill, with the profound sympathy and appreciation necessary to the treatment of those masters whose work is the most recondite of all we know in art. A more appreciative lover of the early Italian art than he I have never known. I have followed him at his work, studied with him the pictures to be reproduced, watched his cunning hand develop the forms which were before us, and given the most careful and prolonged scrutiny to the work when finished; and I do not hesitate to record my judgment that wherever the highest degree of subtilty and the finest shade of feeling were required, whether in the intensity of Giotto's Salutation, or the evanescent expression in the Giocondo of Da Vinci, there is no work in my knowledge so faithful and so reverential as his. To me it would be a loss to art if ever again he were compelled to give himself up to work less worthy than the reproduction of the best art that the world has known. Work so manly, so true, so devout in its spirit, should have no less object than the preservation of the things most worthy of perpetuity."

The opening article alluded to is illustrated by three full-page and several smaller engravings, including two of the "Madonna and Child" from the Florentine collections.

Mr. Stillman's account of the methods

employed for the reproduction of the pictures is so interesting that we add it below for the information of our readers.

MR. COLE'S METHOD.

"The method which Cole follows in these reproductions will interest their admirers. A photograph is first taken of the picture, on which Mr. Cole makes all the corrections needed for the translation of the values of colors into white and black. This is then copied on the wood-block in the following manner: the surface of the block is prepared of an intense black, and on this is laid a sensitive collodion film, such as was used for the once popular ambrotypes, or later tintypes, on which the photograph is copied in the camera, so that a positive image is produced, reversed in position, but correct in light and dark, the lights being formed by a deposit of metallic silver, and the darks by the black ground. The block is then treated as in the case of a drawing on wood, the lights formed by the silver deposit being cut away, showing in turn the pale tint of the wood under the blackened surface, while the shadows are formed by the undisturbed surface. As the cutting progresses the collodion film is removed by india-rubber, leaving the black shadows and gradations of tints in clear black lines as they will be printed. The incised lines being then filled in with finely powdered chalk, the block becomes its own proof, and the effect as when printed can be exactly judged.

The actual engraving of this block after receiving the photographic image, except as to unimportant parts which may equally well be executed from a photograph, is done directly from the originals. All the great line engravings which have been made from the old masters have been done from black and white drawings—or at best, in later times, from photographs, no reproduction by engraving directly from the original pictures having ever, before these of Mr. Cole, been attempted. Etching directly from the originals has lately been done, and for landscape work is all that can be desired; but in my judgment wood-cutting affords, for delicately modeled forms and subtile rendering of human expression, greater refinement than is possible in etching, combining the clean line of copper- or steel-plate engraving with as great range of texture-rendering as etching allows, and the rapidity and equality of impression which wood-engraving alone permits, and which are necessary to wide dissemination. This *ensemble* of considerations will make evident the great importance of the work in which Mr. Cole is now engaged, probably the most important in respect to sound art education of any undertaken thus far—with, perhaps, the exception of the publications of the Arundel Society, which, however, fail in the requisite of being available for unlimited circulation, owing to their relatively great cost, and which are, to my mind, inferior in subtile fidelity to the work of Mr. Cole."

LETTER FROM GERMANY.

Steinheil's Detective Camera.—The detective camera is properly a specialty for amateurs, and since here amateur photography is not carried to such an extent as in America, the use of the detective camera is much more seldom. Lately, however, this department of photography has taken a new life, and some excellent cameras have been produced. One of the newest and most complete is the ingenious invention of Steinheil's Sons, in Münich.

Externally it is a polished mahogany box, as shown in Fig. 1. *g* is a sliding cover in front of a Steinheil lens. Group antiplanet, series II., No. 2, focus 25 mm. *u* is a small knob to move a sliding diaphragm. *h* and *k* are two finders. *m* is a button on the end of a cord that sets the shutter. *n* snaps the shutter, and *p* (Fig. 2) regulates its speed. The camera is focussed by drawing out or pushing in the rear half.

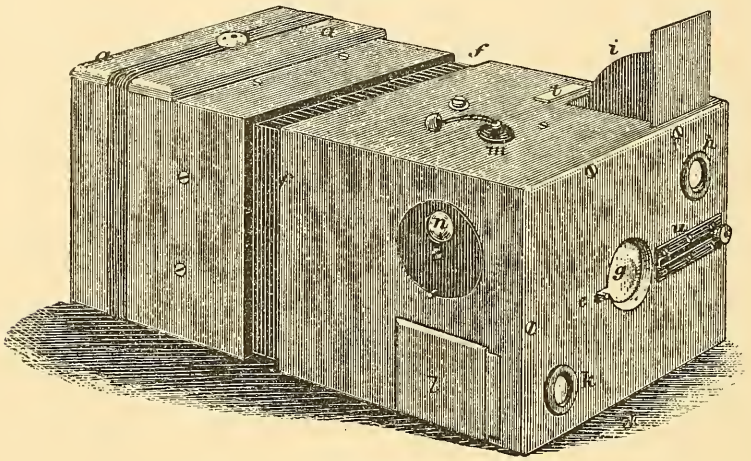
Now comes the peculiarity of the camera. To prepare for use the rear end *d* (Fig. 2) is removed and a *dozen* plates are put in the magazine, each plate being contained in a light zinc carrier (Fig. 3), which serves to hold the plate and to form an opaque back; then the end *d* is replaced. While in use the protector *a* is removed, disclosing a little leather bag *y* (Fig. 2).

Now the amateur is ready for twelve exposures; he does not open the camera, pull

out a slide, close the camera, expose, open the camera, put in the slide, and so on. The plate is always ready for the exposure; he pushes aside the cover of the lens by means of the projection *e*, exposes by pressing on *n*, closes the cover. To change the plate he presses downward on the knob *d* (Fig. 2); this raises the plate plate being all the time inside the bag and the fingers outside. The other plates move forward, and number two is ready for the next exposure. A little ivory tablet *t* serves to record the number of exposures.

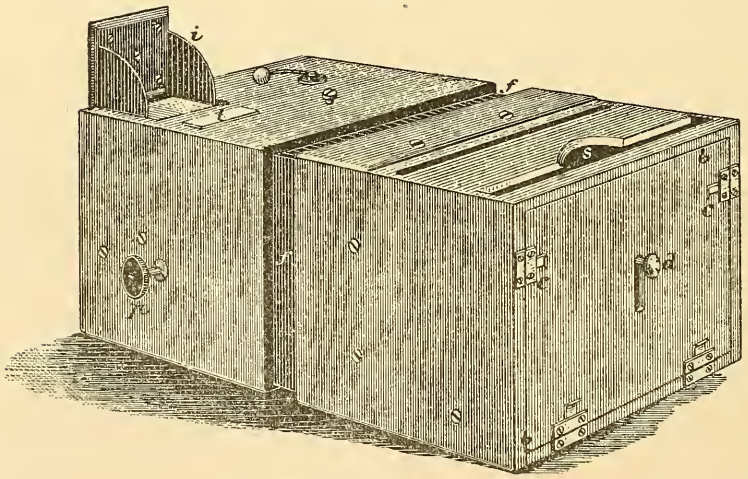
There are a number of happy conveniences connected with the camera. Foremost is the fact that the plate can be

Fig. 1.



Front view.

Fig. 2.



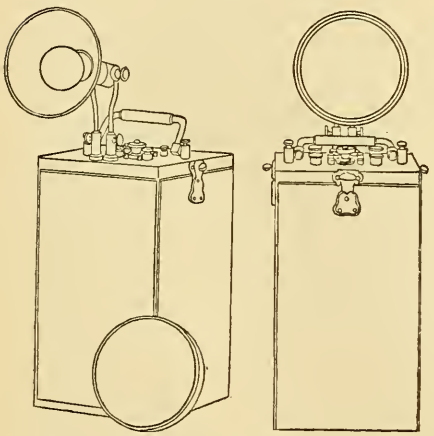
Rear view; with cover *a* removed.

a short distance through the slit *r* inside of a little leather bag. Then with thumb and forefinger he grasps the plate, pulls it easily out and inserts it in the slit *s*, the changed so easily and quickly. Then, again, the photographer carries twelve plates always ready and all contained in a space the size of a plate-box. The "always

ready" also adds one of those assistances that render photography an enjoyment. Anyone who has suddenly come upon some curious subject which vanishes before he can uncover his plate, can appreciate the advantage of having the plate always ready for exposure. That while so uncovered it is perfectly safe from light, the name of Steinheil is a guarantee.*

Thanks to the tariff, these cameras cost fifty per cent. more in America, but here the price is small. Fitted with the Steinheil lens, Series II., No. 2 (the price of lens alone 60 marks), the cost is only 150 marks, or about $37. It is made in only one size, external dimensions, 8½ x 4 x 5 inches; for plates, 9 x 12 centimetres.

Fig. 3.



The "Paris" Electric Lamp.—One of the neatest little arrangements for the dark-room is the "Paris" electric dark-room and retouching lamp. It consists of a little mahogany case, only 4 x 4 x 7 inches, containg four little chromate battery cells. On top of the box is an incandescent lamp, of six candle power, and a reflector so arranged that it can be moved to almost any position. For developing, a ruby glass cap is fitted over the reflector, or, if preferred, another incandescent lamp with ruby glass is inserted.

To light the lamp a screw is turned; this raises the cells so that the electrodes (zinc and carbon) are immersed. The light is bright and steady. For those who work at home in small rooms it is a great comfort to have a lamp of sufficient power, without heat, smoke, or odor.

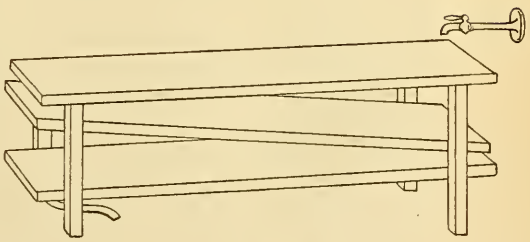
The cost of the lamp is 16 marks, or about $4.00; the cost for burning is about 1½ cents per hour. The time of burning without refilling is about three hours.

For a longer time of burning there is made a larger case with four larger cells; the lamp, however, remains the same—six candle power. This lamp burns ten hours without refilling. The refilling operation is simple and rapid.

Developers. - Germany was until lately the special home of the ferrous-oxalate developer. Even yet the business photographers remain true to their old friend—iron—but amateurs and scientific men are, to a great extent, using the hydrochinone developer. The directions given for using the Obernetter and Vogel-Obernetter plates specially recommend hydrochinone.

An Ingenious Washing Arrangement.—One of the simplest and best arrangements for washing plates is that used by Prof. Vogel, in the Berlin Polytechnicum. It consists merely of long zinc pans arranged at a slight incline, in an iron or wooden

Fig. 4.



frame, so that the water flows gently over the plates from one end of the uppermost pan to the other, and then falls on and flows across the second pan, and so on.

There is not only convenience in washing, but also saving in space and water; two things that must often be economically used.

E. W. Scripture.

Leipzig, October 15, 1888.

* Messrs. H. G. Ramsperger & Co., 180 Pearl St., New York, are the American agents of Messrs. Steinheil's Sons.

SOCIETY GOSSIP.

The Photographic Society of Philadelphia. — At a stated meeting of the Society held Wednesday evening, November 7, 1888, Mr. Stirling made the announcement that, on behalf of Mr. George W Childs, the pleasant duty devolved upon him of presenting to the Society a set of the Muybridge plates illustrating animal motion, reproduced from the instantaneous photographs recently made under the auspices of the University of Pennsylvania.

In making the presentation, Mr. Stirling referred to the great scientific and artistic value of the work, and said it had been Mr. Childs' desire that this copy of it should be in the hands of some permanent organization to which it would be of value. In the Photographic Society Mr. Childs recognized such a body, both by reason of the scientific nature of its objects, and the artistic character of its work. In conveying the plates to its care, he expressed a hearty wish for its long-continued usefulness and prosperity.

The presentation was received with enthusiastic applause, and a vote of thanks was extended to Mr. Childs for his valuable gift.

Mr. Carbutt showed his new flexible negative film, intended as a substitute for both glass and paper negatives. The films are but one one-hundredth of an inch in thickness, and can be printed from either side. They weigh about the same as paper, or about one-twelfth as much as glass. They can be used in any ordinary plate holder, or in special thin holders made for the purpose. The manipulations of exposing, developing, fixing, washing, etc., are performed exactly as with glass plates. The difficulties and inconveniences of paper negatives and stripping films are entirely avoided. Mr. Carbutt also showed a holder devised to carry twenty-four films. By use of a changing bag, after exposure each film was removed from the front to the back of the holder, a fresh film being brought into position ready for the next exposure.

Mr. Bartlett brought to the attention of the members an improvement in mercurial intensification of negatives. When after bleaching with bichloride of mercury, a solution of sulphite of soda is used, if left too long in the second solution the negative becomes reduced in density. If the sulphite of soda solution, which is usually alkaline, is rendered neutral with sulphuric or other acid, this reduction will be prevented, and the intensification will continue to the point desired with an improvement in color.

Mr. Suplee called attention to a report, lately published in the London journal *Engineering*, of a discussion of the Physical Section of the British Association for the Advancement of Science, at the meeting recently held at Bath. But for the distinguished body before whom the matter was brought, and the serious manner in which it had been treated, the report would seem like a fairy tale and not worthy of consideration. It reads as follows:

"Mr. Friese Greene's paper 'On a Photographic Image of an Electric Arc Lamp probably due to Phosphorescence in the Eye,' is a contribution of singular interest. Mr. Friese Greene actually exposed a sensitive plate to the light issuing from his eye, and photographed with it. He stared at a 3000-candle arc lamp in Piccadilly, at a distance of three feet only, for fifteen seconds, closed his eye and brought it rapidly over the sensitive plate within one inch distance from the film. Thus he obtained a very faint yet distinct image of the arc, the two carbons, the image of the arc and the reflector, and also a faint indication of the cone. A second attempt failed. The arc probably produced a bright spot on the retina, which remained luminous for a moment after the lamp had been shut off. One remarkable circumstance of this novel mode of photographing was pointed out by Mr. Shaw: 'The image is in focus, so that the focus of the eye must have changed most rapidly.' Several speakers would have liked to suggest a continuation of these experiments with a weaker source of light, less deleterious to the eye; but Mr. Greene had failed to obtain any effect with gas lights."

Mr. Truscott, a visitor, showed a lens fitted with an adjustable mount, which enabled the glasses to be brought more or less close together, thereby changing the angle of view. A lens by Steinheil of three inch focus and extreme wide angle was shown.

The lens would certainly cover a 6½ x 8½ inch plate and probably 8 x 10. He also exhibited one of Steinheil's group anti-planetic lenses, No. 2 series, an extremely rapid lens, as testified by some excellent prints of a base-ball field with the players in most rapid motion.

ROBERT S. REDFIELD,
Secretary.

OUR PICTURE.

AGREEABLY to promise, we present our readers with the first of a series of reductions from the Minneapolis prize pictures, and very properly begin with some of the prize prints exhibited by President H. McMichael, of Buffalo, New York. We have already reviewed these pictures, in our remarks upon Mr. McMichael's splendid series shown at Minneapolis. The originals were made upon 18 x 22 plates, and the reductions were made from the prints by Messrs. Roberts & Fellows, of Philadelphia, and not from the original negatives. We do not see, however, where there has been any loss of quality or photographic delicacy.

It is hardly necessary for us to explain the meaning of these pictures; the title does it all. The merry little mischief-brewers have, in the first section, made themselves "All Ready," and then, after the preparation, comes the word "Go" from their leader, and they whirl themselves around in the studio. As they "Go" they are caught by the agile camera of our artist, and are presented with all the graceful lines and compositions made possible by their natural attitudes. Such pictures were impossible in our art a few years ago; but now, thanks to the production of the dry plate, and improved optical tools, and increased art knowledge on the part of the photographer, photography can do almost anything.

As we look upon these groupings we find ourselves looking forward to the new year, and very proper it is that we should, at this time of the old year. This picture might be taken by all of our readers, as well as by ourselves, as a text for 1889, namely, to be "all ready" for the work that is to come, and then "go." Then if we may make an additional and personal suggestion, we would say, that in order to become properly "all ready" and fitted entirely to "go," the enterprising and active photographer will subscribe for our magazine for the new year, and take care that he does not attempt to "go" (unless he wishes to go wrong), without it. The best polish possible has been given to this end of the year by the quadruplex enameller of Messrs. Smith & Pattison, to which we have before referred. Thus we are enabled to present a bright side to what is usually a dark side of the old year. The prints were made upon the importation of N. P. A. paper, specially supplied by Messrs. E. & H. T. Anthony & Co., 591 Broadway, New York.

Now we are "all ready," why not let us "go" and do our best in the future, with the hope that it may prove as bright for us as the splendid prints which appear in our current number are.

[*Translated for The Philadelphia Photographer.*]

PLAN OF STUDY IN THE IMPERIAL INSTITUTE FOR PHOTOGRAPHY AND REPRODUCTION IN VIENNA FOR 1888, 1889.

IN this institution instruction is given in the following branches, beginning September 15th. (Scholars admitted from the 12th to the 14th of September.) Preparatory and drawing school. (Evening school, charge five florins for the whole year.) Here instruction is given in elementary free-hand drawing, in geometric drawing, in the study of nature, in professional calculation, and business essays.

First course for photography and reproduction process. (Evening school, charge five florins per semester.) In this course there is instruction given in free-hand drawing, in the study of projection and perspective (for special technical process of drawing for the purpose of reproducing the most practicable regard is had); for advanced pupils there is daily instruction for further improvement in drawing from the plastic, as well as in illuminating and color studies, and in chemistry and physics, as related to photography and printing technique.

Second course, for photography and re-

production process. (Day school, price ten florins per semester.) There are lectures upon photo-chemistry, photography, methods of printing, retouching; also chemical knowledge and press regulations, and the protection of artistic and literary property.

Besides, different professors give practical lessons to the scholars in the studio, laboratories, and printing-room of the building; also in portrait and reproduction, wet and dry negative process, orthochromatic pictures, emulsion preparations, negative and positive retouching, positive copying processes, light-stop methods, diapositive, enlargings, micro-photography, etc.; moreover, in photo-mechanical reproduction process, light print, photo-lithography, zinc etching, photo-zincotype, and other special photographic methods in proportion to the need and the present means. The studios and printing offices are open daily from 8 or 10 A.M. to 3 o'clock in the afternoon.

Concerning the opening of special courses and of a photographic practical school for amateurs, information will be given later.

THE HUMOR OF IT.

"KODAK"—"Never had a picture taken and never will, hey? Well now (click!), there's something just (click!) too bad about that. I wouldn't (click!) either—if I could help it."

AT the restaurant.—"Waiter, bring me a 5 x 8 plate—quick—and see that there is no emulsion on the other side."

To an old print—

Old print forlorn, born but
To fade and turn,
I'd try restoring, but I guess
It's best to burn.

To my new camera—

I saw thee, yearned, then took thee to my arms,
For fellowship in misery has charms.

To my old camera—

How long, I know not, thou hads't leak'd, ingrate,
But light wrong placed has spoiled me many a plate.

When is a landscape photographer heaviest?

When he waits for light.

FACTS AND FANCIES.

I SEE in your valuable journal of November 3d, directions for cleaning old "daguerrotypes." There are but few of the old "stagers" left who used to wield the buffstick and tread the buffwheel, but I was there in 1847. There is one thing Mr. Pickerill suggests I fear, if tried on some of the old daguerrotypes that were not gilded (that is, brushing them), they would find (if they are as sensitive as I am about handling pictures that belong to other people) that after brushing one they might not be able to sleep much the first night after doing it. The process of gilding was by holding a gold solution on the picture, and evaporating a part of it so that a portion of the gold was precipitated on the picture, thus forming quite a protection.—AN OLD DAGUERROTYPER.

AN index to the photographic literature in America for the years 1878 to 1888 would be a book which every one of the ten thousand American photographers should like to posess, if it could be procured at the limited price of $1.00. Every one is in search of a certain article, of some practical advice which he is sure of having seen in print—somewhere and sometime. But after hunting up in vain various indexes of periodicals, the hunter is discouraged and gives up in despair, thinking, perhaps, thoughts not complimentary to the hard-working editor. *A general index*, as suggested above, might easily be compiled by division of labor among five or six collaborators—one taking upon himself the task of indexing THE PHILADELPHIA PHOTOGRAPHER, one Anthony's *Bulletin*, one sifting the often valuable matter found in the question-boxes, etc. A general plan might be sketched out by a chief editor—say Dr. Edward L. Wilson—as to whom no man is superior in general photographic knowledge and executive and literary ability.

Yours, very truly,

KARL KLAUSER.

Editor's Table.

A LARGE envelope crowded with bargain lists, and circulars of blue and golden and brown, with catalogues of books and other goods, comes to us from Messrs. BUCHANAN, BROMLEY & Co., 910 Arch St., Philadelphia, Pa. Our enterprising readers will also secure a copy of this, so we need not go into details.

FROM Mr. G. G. ROCKWOOD we have received a picture that is all loveliness—of a little maiden three or four years of age seated in one of the prettiest of attitudes. Her hair is wavy, and her eyes are brown, and her sweet little face makes one wish that she might never grow to anything different. The whole picture is very pretty.

CELLULOID. — A correspondent asks if some one has really patented (?) the printing of photographs upon celluloid, and we answer that certainly such is the case. We do not propose, however, to advertise the gentleman in any such enterprise, and, therefore, omit his address.

WE have received from Mr. W. C. CULLEN, 62 William St., New York, a very pretty little celluloid tablet of several leaves, with a pretty title page, so to speak, printed in black and blue—on the one side, "What I want of W. C. CULLEN," and on the other side, "Compliments of W. C. CULLEN, etc." Mr. CULLEN accompanies this by several new announcements of articles sold by him, including Obernetter's gelatino-chloride of silver emulsion paper.

MESSRS. BUCHANAN, BROMLEY & Co., 1030 Arch St., Philadelphia, have issued a neat pamphlet which they call "A complete price list of chemicals and preparations manufactured by Willis & Clements for working Willis's patented platinotype." It will be found a great convenience to those who are using that growingly popular process.

THE PARIS EXPOSITION OF 1889.—The United States government having authorized the acceptance of the invitation from the French representative to take part in its International Exposition to be held next year, commissioners have been appointed, and circulars are issued giving particulars to American exhibitors. General W. B. Franklin is the Commissioner-General. His office is at No. 1 Broadway, New York. Photography will be included in Class 12. Further particulars and all necessary circulars may be had by referring to General Franklin.

WE have received from Mr. F. S. FOWLER, Oriskany Falls, N. Y., a characteristic picture of a kindly old gentleman who, having fallen asleep, is leaning back against the counter of a country store while he enjoys his nap. It is very characteristic and "sleep like," not to say life like.

MR. H. BUTLER, Vermillion, Dakota, has favored us with a picture that was made of a lightning flash recently, when the sun was about two minutes from setting. The lens was uncapped after the flash had started, and there appears to be a bolt discharged which reaches from the ground to the sky; faint outlines of trees and buildings are seen. In the view before us the lightning seems to have taken very erratic turns.

FROM Messrs. J. E. and A. J. RÖSCH, St. Louis, Mo., we have received a beautiful cabinet photograph of a young lady who represents the living portion in their celebrated picture exhibited at the Minneapolis exhibition, called "Alone." We have also received a copy of "Alone" for reduction, which we shall present to our readers in good season, either by photogravure or by one of the processes.

WE regret to learn of the death of Professor HENRY CARVILL LEWIS, late Professor of Mineralogy at the Academy of Natural Sciences, Philadelphia, and of Geology at Haverford College, Pa. Prof. LEWIS was in Europe at the time, whither he sailed in July last with Mrs. Lewis, with the expectation of remaining four or five years. He was apparently in excellent health when he started on his trip, but typhoid fever seized him and resulted in his death. His taste for photography was well known, and was employed by him in many of his useful studies.

WE have received a number of inquiries concerning the new flash-lamp exhibited at the Minneapolis convention by Mr. ROCKWOOD. The advertisement of the manufacturer will be found in our current issue. Mr. ROCKWOOD tells us that he uses the lamp to *supplement* daylight on dark days.

The Studio, published at $3 a year by the Studio Publishing Co., 864 Broadway, New York, is one of our very best art magazines, and affords art students splendid opportunities for studying the principles which should govern every true artist in his work under the skylight. Besides the glow and flow of expert information, splendid reproductions from famous pictures are given in the *Studio*. The October issue has three of these, as follows: "The Lady with the Fan," by Alfred Stevens; "Sad News," by Casper Netscher, and a "Landscape," by Jan vanGoyen, all fine studies in composition and light and shade. This valuable number alone can be had for twenty-five cents. The art "Notes" in every issue of the *Studio* are well worth the price of the whole issue. If you are looking for art help for the new year remember the *Studio*.

The meetings of the Society of Amateur Photographers of New York at No. 122 W. 36th St., near Broadway, are very interesting to visitors, who are always welcome. On Friday evening, November 30th, a lantern exhibition was given, consisting of lantern slides by the Photographic Society of Philadelphia, contributed to the interchange. The series was augmented by slides of the members of this Society. An exhibition of photographs commences on the evening of November 30th, and it is hoped members who have not already sent in prints will do so at their earliest convenience. Mr. Clarence S. McKune is secretary, No. 122 W. 36th Street.

Sun and Shade—Holiday Number. As has already been announced in our advertising columns, the December number of our art-photographic contemporary *Sun and Shade* will be a special Christmas number of an unique character, as its plates will be filled exclusively with a series of pictures of children. The Photogravure Co. will present some of its most beautiful works in this number, which promises to be a remarkable one. As it will appeal to everyone interested in children, at the children's own season, its welcome is assured. It will not contain merely reproductions of child photographs, although some very charming head and figure studies have been secured from some of our best-known children's photographers. The leading plate will be a superb photogravure of the Madonna.

Another painting reproduced is "The Shadow of the Cross," a most appropriate picture for Christmas-time. A most charming plate of a child's head by Rockwood is printed by a new process in colors, and rivals, if it does not surpass, some of the similar work in French periodicals. Another novelty is a photograph-statue of a child, surprisingly effective.

The number will appear about December 10th, and in spite of the fact that the first edition printed will be double the usual number of copies, the photographer who wishes to have it promptly in his reception-room to delight his holiday patrons had better order early.

A Correction.—Mr. Jex Bardwell says: "On page 628 of October 20th *P. P.*, three lines from the bottom, it reads: 'he adds 500 grammes (16 oz. troy) of hydroquinon.' It should read 5 grammes (75 grains of hydroquinon), I think."

A Noted Studio for Sale.—It is not often that a noted studio, in a good locality, where excellent prices and excellent work are always had, is offered for sale at a bargain, and yet the Bowman gallery—the gallery of Bowman the veteran photographer—of Ottawa, Ill., is offered for sale. It has an honorable record of long standing. If we are not wrong it will not wait long for a buyer. Mr. Bowman's prosperity has enabled him to be tempted into other investments, and now he wishes to retire for what taxes his energies less.

Dry Pyro.—On page 700 of Nov. 17th, Mr. Frank Robbins notices that Mr. Pray advocates the use of "dry pyro at last." If Mr. Robbins will read the Philadelphia Photographer for June, 1885, he will find that Mr. Pray *at that time* condemned pyro in solution, and has since, except a solution made in the morning for each day's work. Yet Mr. Pray does not advise the use of small quantities of alum, or any quantity of alum in the hypo bath, but advises a strong alum bath and then washing before the photo goes to hypo.

The New England Meteorological Society proposes to have a loan exhibition of meteorological apparatus, photographs, etc., at the Institute of Technology, Boston, in connection with its fourteenth regular meeting in January, 1889. For this purpose the Society invites contributions of:

1. Photographs of lightning, clouds, meteorological apparatus and observatories, and of buildings demolished by wind, tornado tracks, overturned trees, etc.

2. Charts and maps, and objects damaged by wind, lightning, hail, frost, and heat.

For particulars send to A. Lawrence Rotch, Blue Hill Observatory, Boston, Mass.

Specialties.

ADVERTISING RATES FOR SPECIALTIES.

25 cents for each line, seven words to a line—in advance. *Operators desiring situations, no charge.* Matter must be received a week before issue to *secure* insertion. Advertisers will please not ask us for recommendations. ☞ We cannot undertake to mail answers to parties who advertise. Please always add your address to the advertisement. **Postage-stamps taken.**

MAKE OUT YOUR OWN BILL, and remit cash with your advertisements, or they will not be inserted.

FOR SALE AT A BARGAIN.

BOWMAN, the veteran photographer at Ottowa, Ill., after more than thirty years at picture-making — having other business interests which require his personal attention, making it necessary to leave his extensive photographic business in charge of employees, and realizing that experienced, successful, trustworthy photographers of good habits, who will do as they would like to be done by, that desire situations at reasonable wages, are very scarce—he has therefore decided to *sell out* at *less than one-half the actual value*, providing a buyer can be found soon who wants a good gallery and extensive well-advertised photograph and portrait business, and who has the money and securities to exchange for said business. The gallery is centrally located, less than two hundred feet from the new court house, which cost about one hundred and fifty thousand dollars. Negatives have been preserved for twenty-four years, which pay well by orders for duplicates. The gallery has two large north skylights, electric light for operating, etc., a Cooper lantern for bromide enlargements. Good cameras from card to 11 x 14 sizes, for portrait and indoor work. Stereoscopic to 11 x 14 cameras and view coach for outdoor work.

The gallery is well furnished with backgrounds, accessories, furniture, mirrors, show cases, stoves, printing frames, trays, etc. I have the right and foregrounds for the Coolidge comic and caricature pictures, also a Marcy's Sciopticon with more than one hundred transparencies, parlor stereoscopes, etc.

The gallery is supplied with gas, pure running spring water, also a cistern for rain water, sinks, water closet, and waste-pipes. I have plenty of room, with good ventilation. All the lights, interior fittings, etc., belong to me, hence my rent is correspondingly low. Taxes and insurance are also very reasonable. I keep for sale an extensive stock of photograph and portrait frames, mattings, albums, stereoscopes, views, novelties, etc.

This gallery, with the quality and quantity, and the prices secured for daily productions, has few equals in the interior of the State, with no superior in any city of twelve thousand inhabitants.

I get three dollars per dozen for cards, and five and six dollars for cabinet-size photographs, other sizes in proportion.

Persons wishing to invest must see and examine this gallery in person, as it is impossible to describe and enumerate in detail in writing, hence, *do not ask it.*

One or two good successful photographers, with my old-time *git up and git*, can by industry and economy earn and pay for this extensive business in one year.

Finally, if you have the where-with and want to invest, come and see me soon. I will use you well, whether we succeed in trading or not.

Truly thine, WM. E. BOWMAN.
Court St., Ottawa, Ill.



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The "Rapid Euryscope," fifth series in the importers' price-list, yields the most accurate definition with most beautiful and delicate detail of any lens yet produced.

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For Professional Photographers and Amateurs.
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Send 10 cents in stamps for sample "Sepia" or "Black" print and latest circular.
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30 Per Cent. Discount.

For a trial order, large or small, to introduce our plates to new customers. Try us and get our prices for regular supply. Plates guaranteed as good as any on the market. Smith & Harrison Dry-plate Co., Iowa City, Iowa.

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16 x 20	1.15	1.40
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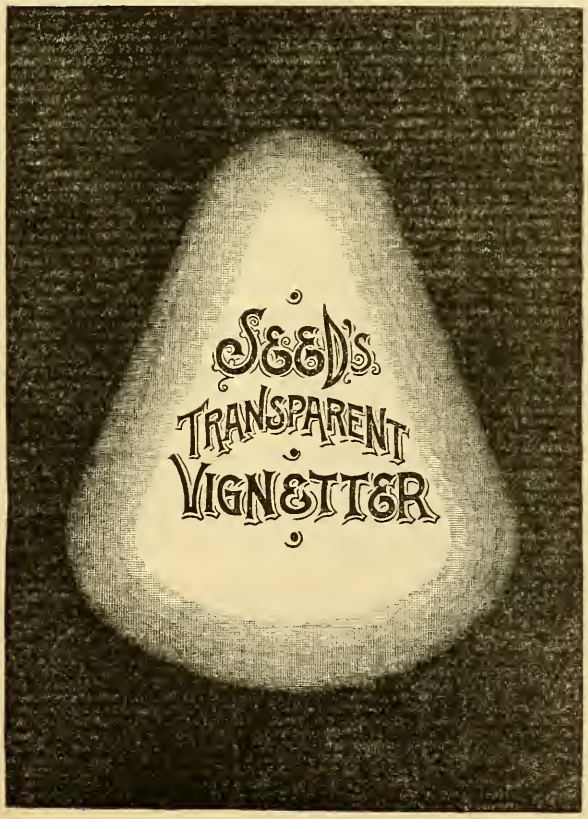
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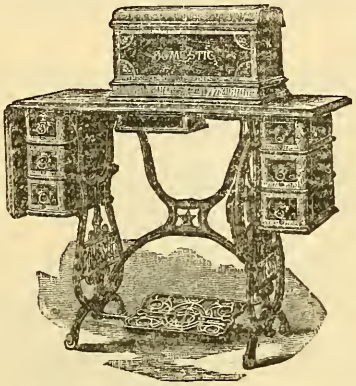
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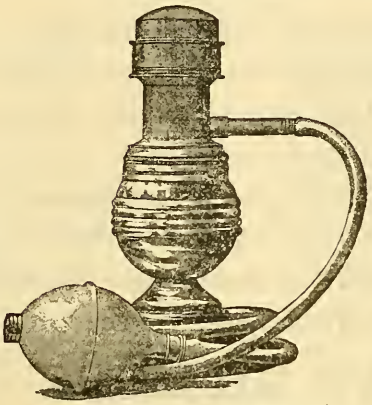
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FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHY.

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BY THE USE OF THE

Imperial Magnesium Flash Lamp.



[PATENT APPLIED FOR]

Absolute safety is secured, and the strongest illumination obtained, with none of the dangers to person or surroundings attendant upon the use of some of the many dangerous and unsafe Flash-light Compounds now upon the market.

WE are assured by scientific experts and professional photographers that magnesium **alone**, uncompounded with anything else, gives the most perfect actinic effect.

The simplicity of construction and manipulation, enabling all to use it with the utmost ease and certainty of result, will at once commend itself to both the Professional and Amateur. The amount of smoke given off is insignificant; exposure succeeding exposure without hindrance therefrom. The full charge is 15 grains (at the utmost 20 grains) of *pure Magnesium*. A few grains, however [3 to 5], being sufficient for simple portraiture. The cost of each charge is a fraction of a cent. A lucrative evening business can be speedily built up, as with the use of this Lamp negatives may be secured with quicker exposure and more certainty than by daylight.

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GENTLEMEN: I have given your new Magnesium Lamp a most thorough trial, and am so full of enthusiasm at the result that it is difficult to express myself. The work which I herewith send you is of more value in commendation than words. The 8 x 10 interiors were taken with a **wide-angle Dallmeyer lens,** instantaneously, at a cost of less than two cents for magnesium. I think you will agree with me that the results are suprising. I suppose you are aware that pure MAGNESIUM without any other component gives the best actinic light when there is *complete combustion.* The construction of your Lamp insures this. Yours very truly,

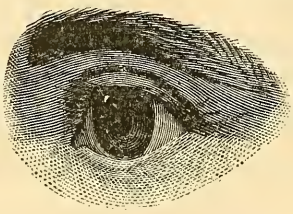
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13. Dark-room Contrivances.
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A NOTEWORTHY BOOK.

WILSON'S QUARTER CENTURY IN PHOTOGRAPHY. A Collection of Hints on Practical Photography, which form a Complete Text-Book of the Art. By EDWARD L. WILSON, Editor of *The Philadelphia Photographer*, Author of *Wilson's Photographics*, *Photographic Mosaics*, etc. New York: Published by the Author, 853 Broadway. 1888.

The title of this work very clearly sets forth both the scope of its design and the nature of its contents. But the general reader will find in its historical and in its explanatory portions as well, not only valuable information concerning the practice of the art, but also concerning the relations of this art to Art.

For example: He will find throughout the work just such relatings of photography to Art as are given in the words of Charlotte Adams, on p. 175. She shows how clearly the brush is indebted to the camera. And the author supplements her words with his own admirably written sentences, that plead for the artificer in glass and chemicals and light, to become an artist *with the soul of Art* within him.

If it be true—and it is true—as somebody has said, "that it takes a great deal of life to make a little art," we may judge that Mr. Wilson has seen a great deal of the *reality* of life, or he could not have written as the conclusion to a paragraph full of poetic feeling, "The man who sends out a bad picture into the world is a doer of evil. If he is a poet and a true artist he will never permit that."

This work, however, is not designed so much for the general reader as for the amateur student and the professional photographer. Here the chemistry, the optics, the mechanics, and philosophy of the entire subject are treated by a master-hand, deftly touching all with art and heart.

The great test of such a book comes not with the reading, but with the use. The clear style, the straightforward directness of every line, the exactness of all dimensions given, and the fulness of all treatments, give assurance that this work is for *use*. We do not see how any photographer, or any learner of this wonderful art, can attain the most complete and perfect mastery of the subject without this work. It is a complete thesaurus, and one not soon to be supplanted by a better.—DEAN WRIGHT, in the April *Boston Academy*.

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During the last half-dozen years which have seen the annihilation of uncountable dry plates, innumerable questions have suggested themselves as to the whys and wherefores of the many provoking failures we have made in photographics. Working spasmodically, as rare idle moments presented themselves, it is little wonder that perfect success was so seldom achieved, but just what it was that sometimes produced perfect negatives, was no less puzzling than what it was that so often produced perfect failures, and it was slowly borne in our mind that this fascinating art had its foundations in science, and that it would be quite useless to seek the answers to the riddles without first having, with some little thoroughness, refreshed one's memory as to the operation of the law of optics and the order of chemical reactions. By blindly following the instructions of the hand-books that are prepared for the use of amateurs, a reasonable measure of success rewards the operator, until there comes occasion for leaving the plain road and attempting to work to the desired end with no better guide than an awakened instinct. In such straits as these recourse is had to books, which teach the subject with all desirable thoroughness only to find that they are somewhat diffuse in treatment and voluminous in bulk for a busy man, who is not preparing for a professional career, to spend his time over. There was really a need for something between the slight hand-book and the all embracing treatise, and such a book has been prepared by the editor of the Philadelphia Photographer and the writer of several books on photographic methods. It is adapted to the needs of both amateur and professional, and would be a useful hand-book to have in any gallery, and it has one preëminent qualification for such service, it is nearly square in form, and, as a consequence, will open out flat and stay open, as books of the usual shape rarely will.

It is a very curious book in its make-up, a double-headed Briareas which helps with both head and hands. Each paragraph of the author's is paralleled by voluminous extracts from other writer's all bearing on the subject-matter of the paragraph in question. One does not, therefore, have to stop and go in search of what other authorities say on the point, it is all brought together here in one place, and the book becomes a library of books on photographics, but one in which the differing views are, in a sense, already digested and assimilated for the student.

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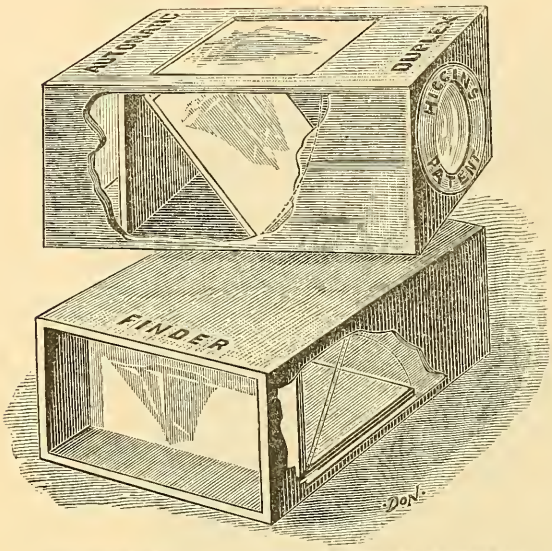
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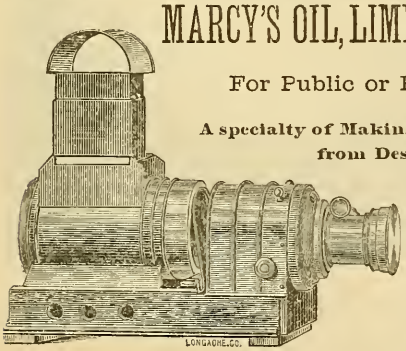
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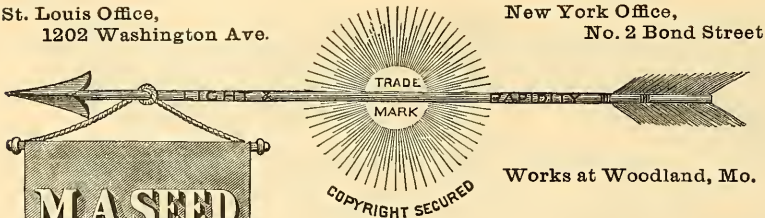
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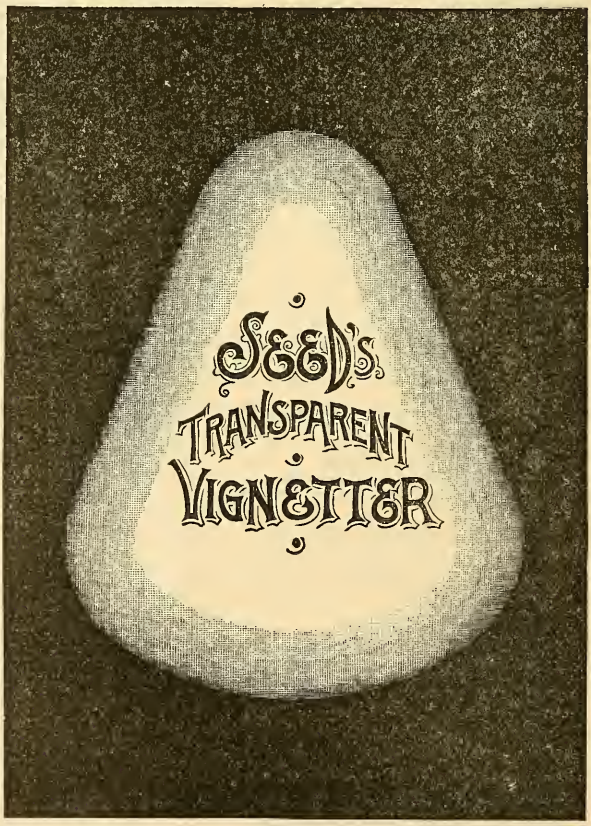
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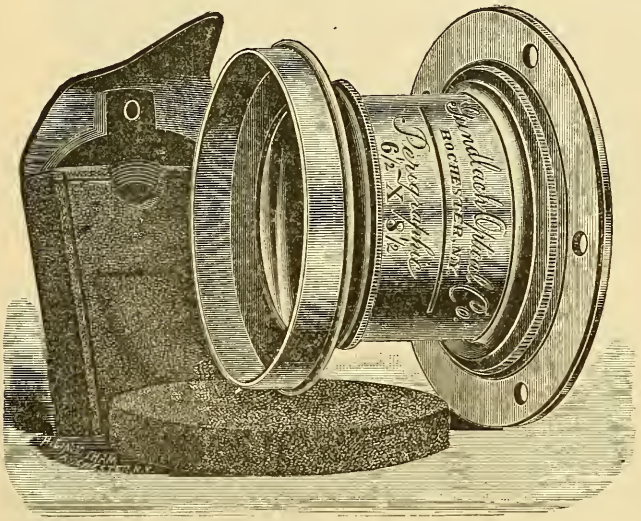
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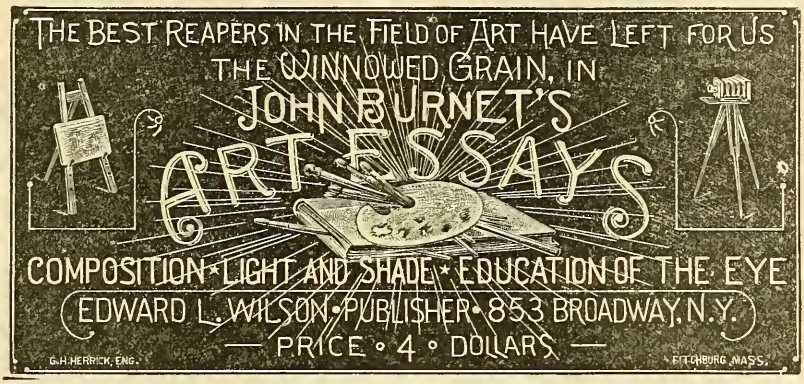
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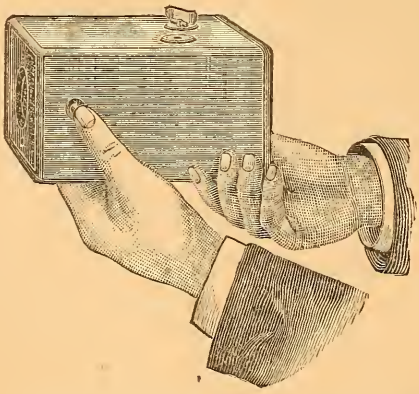
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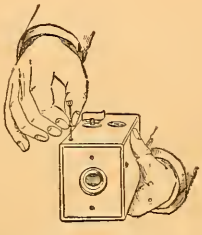
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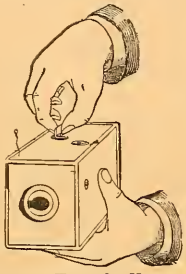
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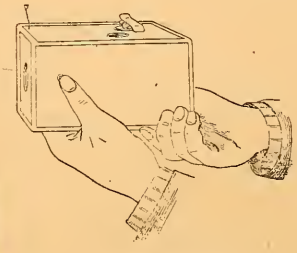
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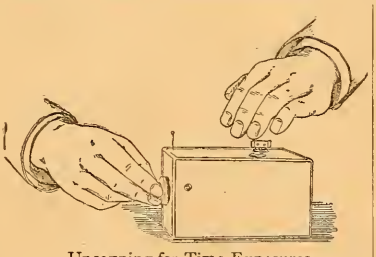


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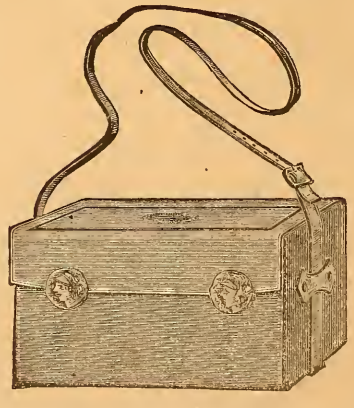
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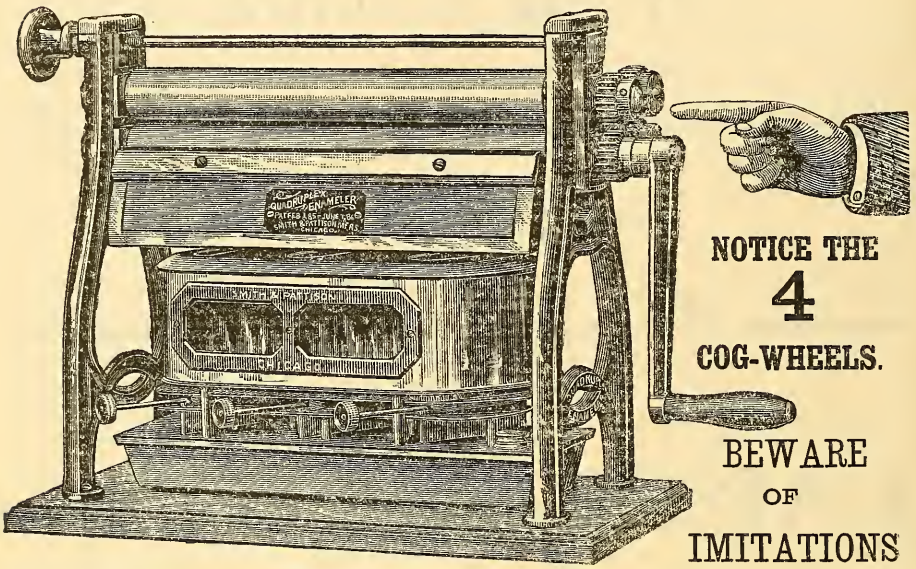
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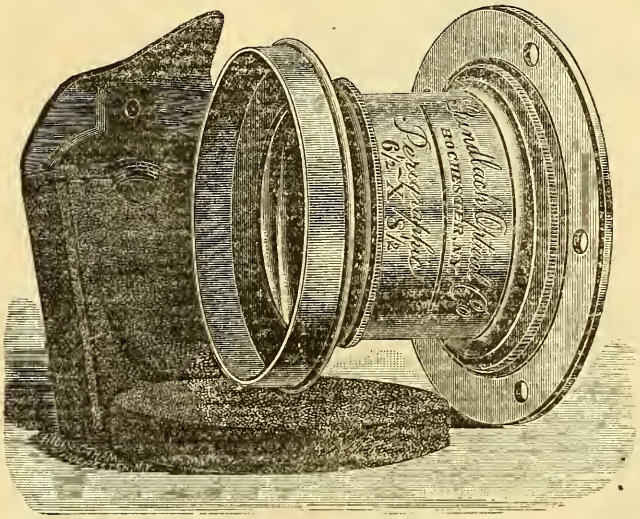
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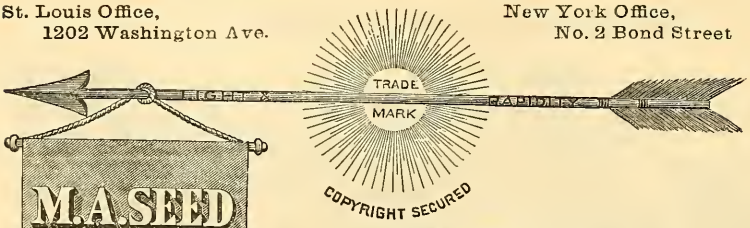
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GAEDICKE, J.....Emulsion Leaves.
GRUBB, Sir HOWARD.....Instruments for Photographing the Stars.
GUNDLACH, ERNEST.....On Portrait Lenses.
HOUGH, E. K.....Protection in Photography.
HURD, G. L.....Hygiene as Applied to the Practice of Photography
HOVEY, C. T.....A Cheap Apparatus for Making Lantern Slides by Reduction.
HUSNIK, M.....Leimtypes.
HARNEY, Dr. THOS. W.....A Substitute for the Dark-Room.
HIMLEY, Captain EUGENE.....A New Hydroquinone Developer.
" " " .....The New Lead Intensifier for Dry Plates.
HIMES, Prof. CHARLES F.....Stereoscopic Notes.
HARRISON, GEORGE E.....Hypo Eliminators.
HARMER, JOHN.....Mechanical Aid to Brilliancy.
HEPWORTH, T. C.....A Cheap Flash Lamp.
HARRISON, W. JEROME.....First Principles of Photography, Intended for Beginners.
HARRISON, W. J.....Astronomical Photography.
" " .....The Naturalistic School in Photography.
HAIGH, J. W.....Micro-Photography.
HODGES, JOHN A.....A Few Notes on Instantaneous Work.
HOLLWAY, J. J.....The Sailing of the Smacks.
HANSON, W.....Another Word about Alkalies used with Pyro in Development.
HARRIS, J H. E. J.....Compositions.
HUBERT, J.....On Development and Kindred Matters.
HASWELL, JOHN D. C. L.....The Decadence of Stereographic Art and Some Hints to Photographers who Desire to See it Revived.
HEMERY, LINDSAY.....Artistic.
HARRIS, CHARLES.....Obiter Dicta.
HOLMES, T.....Halation.
HARDING, MARTIN J.....A Postal Photographic Society.
ROCHE, T. C.....On Glass Stereoscopic Slides.
ROOD, Prof. O. N.....A Simple Actinometer
ROBINSON, H. P.....Art or Accident.
ROBERTS, ISAAC.....Stellar Photography at His Observatory.
ROBINSON, RALPH W.....Bromide Paper. A Reducer and a Mop.
SCHUMANN, VICTOR.....Influence of Temperature upon the Optical Properties of a Quartz Spectograph.
SELLERS, COLEMAN.....Some Hints from an Old Amateur.
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SKEEL, Miss ADELAIDE.....The Photographic If.
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SCHNAUSS, Dr. J.....A Word About Organic Developers.
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STEVENS, Prof. W. LECONTE.....New Apparatus for Demonstrating the Laws of Refraction and Reflection.
SEISK, J.....Developing Gelatino-Bromide Plates for Lantern Slides and Transparencies.
SEDGFIELD, RUSSELL.....Halation from Windows.
SMYTH, Prof. PIAZZI.....Some Photochromatics.
SALMON, S. H. R.....The Artistic Side of It.
SEAVEY, LAFAYETTE W.....Nature in the Studio.
SMITH, JOHN HENRY.....Indicators for Photographic Chemicals.
SALOMONS, Sir DAVID.....Large Heads in the Studio.
SANDS, HAROLD.....The Conventional in Photography.
SWANSON, P.....Where Do You Fill Your Printing Frames?
SIMS, SAMUEL.....Out-of-Door Photography.
SOAMES, Rev. H. A.....What to Photograph.
SCOTTON, THOMAS.....Various Photographic Processes for Copying Line Drawings, etc.
SAYCE, B J.....The Advantages of Paper as a Support for the Sensitive Surface.
STEGGELL, Prof. J. E. A.....The Use of the Diaphragm in a Landscape Lens
STURMLEY, HENRY.....Storing of Negatives.
TYLAR, W.....Some Points on Using the Magnesium Flash Light.
TAYLOR, J. TRAILL.....Portraiture in a Private Room.
TINDALE, N.....Field Work.
THOMPSON, H. Y.....A Few Observations of General Interest.
TURNER, F.....The Focusing Cloth and Other Matters.
VEREKER, Hon. J. G P.....Art and Photography.
VEVERS, C. C.....Summer.
VALENTINE, G. W.....How to Develop without a Ruby Lamp.
" " .....Peotography on Board Ship.
VOGEL, Dr. H. W.....The Progress of Art in Photography.
VAUX, GEORGE, Jr.....Some Hints.
WILCOX, Dr. R. W.....Professional versus Amateur.
WALMSLEY, W. H.....Orthochromatic Plates in Photomicrography.
WOODMAN, Dr. CLARENCE E.....An Amateur's Dark Room.
WALLACE, Dr. ELLERSLIE.....What I Hope to See
WILDER, ED. F.....A Camera Support for Use on a Tricycle.
WILSON, Dr. EDWARD L.....The Photographer's Creed.
WATSON, C. J.....The Ferrous Oxalate Developer.
WAKEFIELD, H. P.....How to Frame Photographs.
WILLIAMS, H. H.....Silver Printing.
WARNER, W. HARDING.....Photography in Colors.
WALL, E.....Rapid Printing on Alpha Paper.
WHIPPLE G. W.....A Small Contribution to the History of Photography.
WOLLASTON, S. G. BUCHANAN. Exhibitions and Exhibitors.
WATTS, WALTER A.....Exposure Tables and Actinometers.
WARD, H. SNOWDEN.....The Present Position of the British Professional.
WARBURTON S. A.....Amateur Plate Making.

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THE GRAPE HARVEST.

THE

Philadelphia Photographer.

EDITED BY EDWARD L. WILSON.

Vol. XXV. DECEMBER 15, 1888. No. 336.

TWENTY-FIVE YEARS OLD, and A HAPPY NEW YEAR GREETING.

The appearance of this issue of the Philadelphia Photographer completes, on our part, a service of twenty-five continuous years in one editorial chair in behalf of photography and its votaries. We feel somewhat proud of it, and have an inclination to celebrate it in some way. But we refrain. Life is too practical and photography grows too fast for us to stop and make any sort of a time over what has gone by. When the Philadelphia Photographer was first exposed the treadle of the daguerrotype buff-wheel still thumped upon many a floor; the mercurial fumes oozed out from many a dark-room, and spirited away many an unintentional oath which "came" because the picture would not "come;" the carte-de-visite was struggling for popularity; the cabinet was unborn; the silver bath was a pester; dry plates were nibbled at; albumen paper was rapidly driving away the ammonia nitrate, and—the photographer was ashamed of his vocation. Our art was snubbed on every side, and the camera focusser knew very little of art. Now how changed. You know all about it, and we intend to tell you more when we present our series of reminiscent articles during 1889. A quarter of a century has wrought most wondrous changes in photography, and has made it useful to almost every art, science, and industry. We would not dare to sit down and think it all over, had we the time. Let us consider that we have had a grand celebration over it all, with a banquet thrown in; congratulations to the veteran editor from all sides, bows and smiles, and "a neat reply;" presents, flowers, abundance of subscribers' portraits, and all that sort of thing; wishes for "another quarter of usefulness," and —then push on for the future.

That will bring us then to our change of name and to the new year. For one and all we wish that this last may be a most prosperous and happy one, abundantly and satisfactorily so. All in our power shall be done to help you make it so. We are aware that we must work in order to continue our magazine as "the best of all," for our good contemporaries are also working hard, and thus our labors are added to. But we are heartily fond of our work, and it will be no hardship to increase our efforts.

A living is a necessity, or we would not say one word about our prospectus on page 3 of the cover, or of renewals; or getting up clubs; or presents to your help and to each other; or new subscribers, or sending in your subscriptions promptly, lest you miss the early numbers of Wilson's Photographic Magazine, Vol. I., 1889.

PHOTOGRAPHIC MOSAICS. 1889.

It is not for us to praise our own work. "The proof of the pudding is in the eating," the sages say. If that is true, then *Mosaics* for 1889 is a good book, for the first

edition of three thousand copies was snapped up before the binder had given them the finishing touches in his trimming machine and hydraulic press.

Still there are one or two things about *Mosaics* which we have not before mentioned in editorial or advertisement. We have already presented a condensed list of the contents, though it does not half represent the topics discussed. The list in the book must be seen in order to appreciate all. The examples of process printing, seven in all, are worthy the special mention we have alluded to. Two are by the Levytype Company, Philadelphia (one from a fine portrait by Gilbert & Bacon, Philadelphia); one by the Albertype Company, New York; and four by the Moss Engraving Company (a portrait; a sunset scene; a bit of the Arch of Titus, Rome; and a reproduction), all very excellent. Thus three different methods of reproduction have representation. They make the *Mosaics* very attractive indeed as well as valuable.

The articles are by some of the very best writers (examine the list in the advertisement), and are of an intensely earnest, anti-frivolous, very helpful character.

The "Publisher's Notice" further explains (we quote it literally) thus:

"My ambition tried to get the upper hand of me this year, and urged the advantages of changing the form of *Mosaics* to that of the older and newer photographic annuals. When I made the attempt to carry out the suggestions, however, my heart began to fail, and I decided to make no change. I was assured by a number of the contributors that 'a compact book, crowded with matter intensely practical,' would be most acceptable to the craft, and thus I have tried to make *Mosaics* for 1889. Again, since there are thousands of good, warm-hearted photographers yet alive who have patiently read *Mosaics* for nearly a quarter of a century, and who want it to appear uniform on their shelves, I have been all the more willing to preserve its old-time shape, character, and size. 'Old-fashioned' and 'different' though it may be, it will be found full of wise instruction and helpful suggestions. It is not the most beautiful of its class; neither is hyposulphite of soda the best-looking crystal used in our art—but it fixes up things pretty clearly, and will never lose its usefulness in our blessed art. I hope *Mosaics* will follow, and follow suit. Thanks to all who have helped me make this hope likely to be realized.

"The pictorial supplements are well worth attention and admiration.

"A happy and prosperous 1889 to all."

When a person interested in any art or interest, can purchase 144 pages of such condensed value for 50 cents, it is unwise not to secure a copy. We bind a limited edition in green cloth, gilt, at $1.00 per copy.

PHOTOGRAPHY AT THE AMERICAN INSTITUTE EXHIBITION.

When we consider that the American Institute of this city has a "Photographic Section," and that its General Superintendent of Exhibitions is one of the oldest and most skilled amateur photographers and authors in our country, we are forced to consider the 1888 photographic display of the American Institute a failure—only a little less of a failure than it was last year. We presume this is the case because no special effort was made to "work up" a photographic department.

The bright spot is supplied by the college, field and boating groups of Pach Brothers, 841 Broadway, New York—work of a kind in which they stand first. Their interiors are also specially fine. Mr. William Kurtz makes the most remarkable display of photo-etchings and photo-engravings that America ever saw. Mr. Kurtz is doing magnificently in this and in orthochromatic work. The Photogravure Company's display is characteristic and fine, as our readers will all take for granted. Mr. Landy's "Hiawatha" is there, and Mr. G. G. Rockwood's usual display of children's pictures always has a crowd of mammas and their — etc. around it. Mr. Rockwood's bromide enlargements are very superior, and his flash-light groups are unexcelled. When we have said this, we feel that we have done our duty to our readers who will not see the exhibit, and, therefore, do not need details.

THE HUMOR OF IT.

SHE: "I cannot marry you, but I would like one of your cabinet pictures, and then I would be your sister."

He: "Oh! thanks, awfully. The photographer says I am so ugly I always break his camera when *he* "takes" me."

She: "I am sorry, for that, for I was going to show you my new Kodak. But I might not be able to get it mended again, so—good-bye."

OUT of focus, evidently. Travelling view photographer (who is looking for work, and has "annoyed" Mrs. Snobson beyond endurance), "Your house, madam, may burn down, and then what would you do without even a photograph of it?"

Mrs. Snobson (impatiently to servant): "Show this man the front gate immediately, Henry."

Photographer: Well, now, that promises to develop business. "Madam, I will take that gate and the dog standing guard for five dollars."

WHY is a Gundlach view lens like a tramp? Because it covers a wide field.

THE wide field covered by the Philadelphia photographic stock houses was illustrated the other day by a direct order received by one of them, Buchanan, Bromley & Co., for a complete 5 by 8 amateur outfit for Wei Hein, of Shanghai, China. The best of everything, regardless of expense, was to be shipped.—*Philadelphia Ledger.*

And where is the humor of that? Why the PHILADELPHIA PHOTOGRAPHER carried the news to China.

MR. CARBUTT'S new flexible films are *very* sensitive. He has taken *everything* for it.

"SOME one should preach a sermon on the bad taste of pursuing good taste too exclusively."—XENOS CLARK, *in the December "Century."*

I think I never felt so good
As when my dear Mariar,
Before my Kodak camera stood
And said, "Jim, kiss first—fire!"

AN AFTER-THOUGHT OR TWO.

BY A. W. DIMOCK.

How would it do to give your amateur readers a few concise hints which might reduce by a few hundred the failures they must make before spot, streak, and fog become the exception, instead of the rule, with them. For example:

Exposure.—In a clear, bright atmosphere and strong light, you can scarcely underexpose. Beware of the tendency to overexpose. In a poor light, as an interior, it is difficult to overexpose. Expose fearlessly. It will take a hundred experiments to teach fully the vast relative difference in effect upon the plate of a strong and a weak light.

Development.—There is but *one* developer for the amateur—hydroquinone. Take any of the published formulas. Use fresh solution for short exposures, and old solution for fully-timed ones. Keep your solution carefully corked, and it can be used almost indefinitely. Do not fear over-development—your tendency will be in the other direction. Keep your tray covered with a card when not examining the plate. With this developer it requires ingenious blundering to produce spots, streaks, or fog. Fix and wash *thoroughly.*

Printing.—Print *deeply*; there is little danger of the amateur over-printing.

Toning.—Make your own chloride of gold. If from coin, the copper alloy does no harm. The only advantage in buying the double chloride of gold and sodium is the pleasure of paying the price of gold for salt.

For your toning-bath, add one grain gold (in chloride) to two ounces *strong* solution of borax, for each sheet to be toned (or say, for each eight 5 x 8 prints). Do not bother to warm the bath. It will tone in about a minute without, and it is well to keep all solutions at same temperature Use a little bicarbonate of soda in the wash water, preliminary to toning. Fix and wash thoroughly.

When thoroughly washed, squeeze the prints on glossy, properly prepared ferrotype plates and dry either spontaneously or by heat. In the latter way, you can dry the print in two minutes. Let it fall off the plate, which it will do when dry. Do not

pull it off. To take the curl out, lay the print face down upon a piece of plate-glass and draw the edge of a ruler across it, lifting the print behind the ruler as it travels. The print now has a polish which no burnishing can approach.

Finally, use plenty of water; never fail to thoroughly wash and wipe your hands after touching any solution. Wash thoroughly every tray or graduate immediately, after using. Make this a habit, or you will surely pay for neglect in the ruin of plates, prints, and solutions.

Do not varnish your negatives. It is unnecessary, and contains the seeds of ruin in several directions. Keep each negative in a brown paper envelope, properly numbered and described. Arrange them all on edge consecutively on a shelf, as are books in a library. Safety, compactness of storage, and instant availability are thus secured,

There is not a new suggestion in the foregoing; it is useless to the skilled amateur, but may indicate to the tyro a course comparatively free from the rocks and quicksands which, partly through multiplicity of formulæ, lie in wait for the beginner.

HOW TO PRINT TITLES.

BY J. S. MASSECK,
Grand Rapids, Mich.

Some photographers wish to label or mark their photos of views, and do not feel like paying for a printing bill. You can print a white title on your views by taking liquid India ink and writing on tracing paper. Let the label remain until thoroughly dry, cut away excess of paper, or as close as you can trim it to the writing, place the ink side next to the varnish and hold in position while you touch a drop of varnish to the edge, when the varnish will at once run under the label, rendering the tracing paper transparent; and if you have made a neat label you will find a clear, distinct, and perfect label printed on white on your views without a trace of varnish or paper showing.

Should you want a printed job, take tracing paper, which must be light weight, as too thick paper, in printing or writing, will curl and cockle all out of shape. Take plain-face type, use blue-black ink, size, and dust with carmine bronze. After many trials, I find this the most satisfactory.

QUERIES, QUESTIONS, AND CONUNDRUMS.

For a long time, for the more prompt help of our readers, we have caused our stenographer and type-writer to assist us in giving personal answers to queries. The burden grows with the growth of camera-lovers, and we must again fall back on this column to help us out. We issue twice a month, and in ordinary cases that will enable us to give information to the querist in plenty of time. May we desire them to learn to depend upon it? In emergent cases, when requested, we will help quickly by a personal letter.

W. H. inquires where to get "*good* distilled water?"

We answer, of Messrs. Chas. Cooper & Co., 194 Worth St., New York., and of Messrs. James F. Magee & Co., 622 Race St., Philadelphia.

O. H. H. asks for "a rapid process for enlargements by development."

See *Wilson's Photographics*, page 303.

W. H. D. asks if the circular reprinted below is a humbug, and if any party has a right to issue such?

"If you will send a photo of yourself, or any member of your family, we will make you a full life-size crayon portrait *free of charge*. The only consideration imposed upon you will be that you exhibit it to your friends as a sample of our work, and thereby assist us in securing some orders. Also that you promise to get it framed in a suitable frame for a fine portrait, so that the work will show to advantage, but, of course, you will not allow a portrait to stand around unframed and have it ruined.

"We trust you will not consider this a scheme, as it is not, but an excellent way of placing a specimen of our work in your vicinity.

"Be sure and write your full name and address on back of photo when you send it,

as this will secure its safety. We guarantee its return, so have no fear of losing it.

"This offer is good for ten days. This will be a "sample portrait" worth $35.00, and as fine as can be made.

"Hoping you will kindly oblige us, and use your influence in furthering our interests, we remain,

Yours truly,
AMERICAN PORTRAIT CO."
New York.

Certainly the circular is *not* a humbug, and the parties have a right to issue it if the U. S. mail laws are not transgressed. But it is easy to be seen that it is a scheme to sell frames, with a crayon thrown in.

"CLEAR HEAD" wants "further light on making window transparencies." We recommend a trial of this:

Suitable positive transparencies are selected and arranged upon a sheet of paper. A sheet of thinnish glass, the size of a window pane, is procured, and the transparencies, as arranged in their places, affixed to it by either copal varnish or Canada balsam. Strips of colored glass are then cut the proper size to fill in the spaces between the pictures, or, so to speak, frame. These strips are similarly fixed to the sheet of glass, and the whole left for twenty-four hours in order to allow the varnish or balsam to dry. When dry, all the corners and edges should have a strip of tin-foil cemented to them to finish them off. The screen is then ready.

To decorate the window, cement the transparencies directly on to the glass of the window pane, and treat the colored glass strips as before. Sometimes, instead of strips of colored glass, designs in matt glass are used to enclose the pictures. The required pattern is cut out of stiff paper—that is, the design to be left clear is cut out in stiff paper, and this paper stencil is pasted on to the sheet of glass to be ornamented. When dry it is fixed flat at the bottom of the box, some twenty-five centimetres high, with the paper side up, then some five or six hundred grammes emery powder and the same quantity of small shot are placed on it and shaken vigorously backward and forward until the constant rubbing of the emery and shot has roughened the exposed surface of the glass. When sufficiently roughened, take it out and wash off the stencil. The finer the shot and emery powder the finer the grain of the ground-glass part. If flashed glass be used instead of plain, a colored design upon a matt white ground will be obtained.

To CARRIE A.: Ink spots may be removed from paper in the following manner: Take a thick blotting-paper, steep it several times in a solution of oxalic acid or oxalate of potassium, and then dry it. While the spot is moist apply the blotter which has been prepared in this fashion to it, and the ink will be entirely removed. If the ink is on an albumen paper print, it will not be so easily removed.

C. NOLAND asks for "the full formula of Mr. Frank Robbins, where he recommends dry pyro, etc."

It is as follows:

"The most simple developer is the best. Only two bottles are needed. Don't crowd your dark-room with numberless bottles of restrainers, accelerators, etc.

"*Soda Solution.*

"Water	. . . .	48 ounces.
Sulphite of Soda (gran.)	.	2 "
Carbonate of Soda (Anthony's)	. . .	2 "

"(If crystals are used double the above quantities.)

"To develop a 5 x 8 plate take two ounces of the above soda solution and a mustard spoonful of dry pyro (which is about seven grains). It dissolves instantly, making a fresh developer, always of a uniform strength.

"It is a safe way to commence development with about equal parts of old and new developers. If the image appears too slowly, throw it off and apply the fresh developer, which will bring out the details rapidly.

"Save the old developer in a rubber-corked bottle for further use.

"The dry pyro and mustard spoon are best kept in a one-ounce pyro bottle, with a screw eye in the top of the cork for a handle.

"If you prefer to use the pyro in solution, add one and one-half drachms C. P. nitric acid to eight ounces of water and dissolve one ounce of pyro in this.

"For two ounces of the above soda solution, add one drachm pyro solution.

"*Fixing Solution.*

"Hypo. Soda . . .	3 parts.
Alum	1 part.
Water, *ab lib.*	

"I strongly recommend the use of a five gallon jar of fixing solution, in which 8 x 10 and all smaller-size plates can fix face downward and all the silver dissolved from the gelatine films for months can be easily recovered.

"To dissolve alum quickly, put one pound of crystals in two quarts of hot water, and boil for a few minutes.

"It is always best so to control development that the negative will have proper intensity without further treatment."

"LENS-CAREFUL" will find this good:

Lacquer for Brass.—Seed lac, six ounces; blood of copal, ground on porphyry, and dragon's blood, each two ounces; extract of sandarach wood, obtained by water, thirty grains; oil of saffron, thirty-six grains; powdered glass, four ounces; pure alcohol, forty-four ounces. To apply, expose the articles to a gentle heat and dip them in this mixture. The lacquer is beautiful and durable.

Varnishing Leather.—Use thin gum water mixed with an equal quantity of white of eggs.

"COPYIST": *Of course*

Engravings with mildew stains will "copy spotty." Try this to clear them: Free the engraving from dust and float it face downward for half an hour in a solution of six ounces of fresh chloride of lime in a pint of soft, cold water. Then float on the surface of water which contains three drachms of sulphuric acid to the pint. Repeat the operation if necessary and, finally, rinse thoroughly in a spray of cold water and dry between blotting-paper. The only way to preserve engravings from decaying is to keep them warm and dry.

"SILVER DUMB" may like to try this.

Plating Paste.—Any odd pieces of silver may be utilized, if for plating metallic articles, by placing them in an ounce of nitric acid, boiling them for an instant. The acid having dissolved the silver, throw in a good handful of common salt to kill the acid, then make into a paste with common whiting. The paste is to be applied with wash leather dampened in water. The silver surface will be maintained for years.

To C. WALLACE: To kill grease spots before painting, wash over the smoky or greasy parts with saltpetre, or very thin lime white-wash. If soapsuds are used, they must be washed off thoroughly, as they prevent the paint from drying hard.

"SODIUM" will find that salt is a remarkable remedial agent, according to an exchange, which says:

"Salt and cider vinegar will cure obstinate cases of diarrhœa. A solution of salt will relieve pain in bruises. Equal parts of strong salt water and spirits of camphor applied to the teeth is a cure for toothache. Salt will check bleeding of the lungs when other remedies fail. Salt is a remedy in catarrh."

"GREASE ERADICATOR."—The following is said to make a good preparation:

Castile Soap . . .	4 ounces.
Water (hot) . . .	1 quart.

When the soap is dissolved, add

Water	4 quarts.
Water of Ammonia . .	4 fl.-oz.
Sulphuric Ether . .	1 "
Glycerine	1 "
Alcohol	1 ounce.

SILVER INK.—

White Gum Arabic . .	1 part.
Water (distilled) . .	4 parts.
Silicate of Soda (solution)	1 part.

Triturate with the best silver bronze powder sufficient to give the solution the required brilliancy.

"X." *Fumigation with Corrosive Sublimate.*—Dr. Koenig, of Goettingen, recently recommended fumigation with corrosive sublimate as a disinfectant in cases of septicæmia or contagious eruptive fevers. The sublimate was directed to be vaporized by throwing it on live coals. Koenig ordered that a sulphur fumigation should follow, claim-

ing that a harmless compound of sulphur and mercury would result and the danger of sublimate poisoning be thus removed. Dr. Luebbert finds that the sulphur fumigation does not alter the chloride, and that its use in the manner proposed is consequently inadmissible. He further states that experiments on various microörganisms show that sulphur fumigation while reliable and safe is also more efficacious than fumigation with corrosive sublimate.

"L." *Gilding Solution.*—According to *Le Monde de la Science* a desirable electro-gilding solution is made by the following formula:

Phosphate of Soda (cryst.)	60 parts.
Bisulphate of Soda . .	10 "
Cyanide of Potassium .	1 part.
Chloride of Gold . .	2½ parts.
Water (by weight) . .	1000 "

To prepare this bath properly the water is divided into three portions, viz., one of 700 and two of 150 each. The sodic phosphate is dissolved in the first portion, the chloride of gold in the second, and the bisulphate of soda and cyanide of potassium in the third. The first two portions are gradually mixed together and the third is afterward added. A platinum anode—a wire or strip—is used with this solution, fresh portions of the gold salt being added as the solution becomes exhausted.

[*Translated for the Philadelphia Photographer.*]

THE PHOTOGRAPHER'S COMPASS.

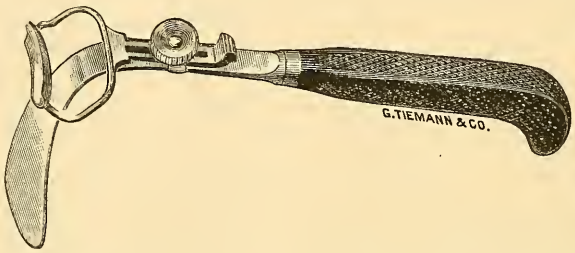
The compass of the photographer is used to determine beforehand, and with certainty, the most suitable point from which to photograph or draw any object. This instrument is composed of a rectangular frame, which may be placed at will either horizontally or vertically. This frame has in the centre a rectangular opening. On the interior edge of the rectangular frame there is a hinged oscillating shutter, the part of which close to the hinge entirely hides the opening when the shutter is thrown back on the frame, whilst the portion opposite the hinge presents a symmetrical outline in relation to the axis of the shutter, and having a maximum curvature at the extremity of this axis, so as to serve as a starting-point for the visual rays. The shutter can, by turning around its hinge, which may be vertical or horizontal, according to the position of the frame, be made to take any desired position, and form with the frame an angle varying from 0 to 90 degrees. By placing this shutter at 70 degrees, it is possible, by fixing the eye on the spot where there is the maximum curvature, to direct the visual rays through the window of the frame, and appreciate in this manner at an invariable distance the outlines of the object to be photographed or drawn. When this instrument is used in photography the object to be photographed is put in place, and by means of the compass it is possible to ascertain, by approaching or backing, the compass being kept open at 70 degrees, if the outlines of the object are well detached in the opening, and if the ensemble is sufficiently large. This having been done, the photographic apparatus is placed in the desired spot; look on the back of the camera, and again verify with the compass, which is thus again found in its initial position, if the outlines and the details of the object are well proportioned on the glass of the frame which receives them, and such as they will be on the photograph.

A SELF-RETAINING TONGUE DEPRESSOR.

BY J. J. HIGGINS, A.M., M.D.

In examinations of the fauces, and especially in operations thereon, the need of a self-retaining tongue depressor and speculum oris is sadly felt. For all the minor operations—such as pencilling, applications of remedial agents in divers ways, excision of the uvula, etc.—the convenience (in some cases the necessity) of having the use of both hands is without question. So strongly have I felt the want of a suitable instrument for such purposes in my own practice that I have been compelled (the armamentarium of our instrument-makers not having one at all adapted to the regular and daily use of the practitioner) to invent and have one made for my own use. It has found such favor with all physicians who have seen it

that I feel constrained to make it more generally known through the columns of your valuable paper. Mechanical description would be tedious and is unnecessary, as the cut illustrating the instrument is a perfect representation and tells the story at a glance. It is adjustable for any size of mouth, or opening thereof—with not even discomfort, much less pain—can be handled and placed *in situ* as readily as the usual tongue depressor, and is self-retaining. It is manufactured by Messrs. G. Tiemann & Co., of this city, of the best quality of steel



—handsomely nickel-plated—handle and other attachments of vulcanite, baked on and highly polished, and thoroughly aseptic in construction.

Too great credit cannot be given the above-mentioned firm for their well-known superior workmanship, which is again shown in the beautiful instrument which they have produced to supply this long-felt want. Moreover, its construction is such that, by a simple turn of a milled screw, an ordinary tongue depressor of a special and improved pattern and shape is at one's service.

For the photographing of the posterior fauces or buccal cavity it is exceedingly serviceable, the sides or walls not being occluded by the instrument, as is the case with vaginal or other specula, but they are seen in their entirety.—*New York Medical Journal.*

PRACTICAL POINTS FROM THE STUDIOS.

A Process for Removing the Water from Alcohol Varnishes.—We know that alcohol varnish gives sometimes in drying a soft and dull film; this effect is due to the presence of water in the alcohol which has been used to make the varnish. Here is a remedy made use of by English chemists: Take a thin sheet of gelatine and cut it into shreds, and place these in the varnish. After some time, the gelatine has absorbed most of the water found in the mixture, and the varnish will give a clear and brilliant coating up to the last drop.—Dr. Phipson, in *Paris Moniteur.*

Distortion of Gelatino-Bromide Paper.—Referring to an article of Dr. Vogel on this subject, *Photographisches Wochenblatt* remarks that in the case of photogrametric prints, the above trouble may be avoided by printing on the film, at the same time as the image, a network of parallel lines crosssing each other at right angles, and equidistant of one centimetre. This is done with the aid of a plate coated with azurine collodion on which has been traced with a pointed instrument the network referred to above. When it is necessary to take a dimension on the print, it suffices to count the number of lines of the network, and to then measure the distance between each extremity and the nearest line. In this way the influence of the distortion disappears, and it is possible to measure as close as one-twentieth of a millimetre.

New Experiments with Hydroquinone—Rapid Formula.—Mr. J. B. Payne, of Newcastle, has recently made a very careful study of hydroquinone. For several weeks he and Mr. Green, his colleague, have been making a collection of all the formulæ published in the journals, and experimenting with them in the development of plates coming from different manufacturers. Plates which gave a superficial veil with pyrogallic acid and ammonia—veil readily re-

moved, it is true, by means of methylic alcohol (wood spirit), showed no trace of it with hydroquinone.

To all the formulæ given up to the present time, there is a serious objection, namely, the retarding of the development. With the formula proposed by Mr. Payne, the average time required for the development of a well-exposed ordinary plate is from two and a half to three minutes only. Here is the formula in question. It is unfortunate that liquor ammoniæ cannot be used instead of caustic potash, which is much more difficult to manipulate.

No. 1.—Hydroquinone	.	0.25 grammes.
Meta-bisulphite of Potash	.	0.25 "
Bromide of Potassium		0.06 "
Distilled Water	.	0.30 c.c.
No. 2.—Hydrate of Potash or Caustic Potash	.	0.65 grammes.
Distilled Water	.	0.30 c.c.

Equal parts of these solutions are used. Bisulphate of potash, called "meta-bisulphite," is, says the author, the best known preservative of the solutions of pyrogallic acid; he has preserved a solution in this manner for more than six weeks, without its showing any change. This salt seems to act in the same manner with hydroquinone solutions.—Dr. Phipson in *Paris Moniteur.*

To Modify a Landscape Negative.—Dr. Stolze gives the following method as being the best to modify a landscape negative. Prepare the following solution:

Water	.	100 parts.
Dextrine	.	4 "
Sugar	.	5 "
Bichromate of Potash	.	3 "

and a few drops of ammonia, until the odor is perceptible in the liquid. This mixture is used to cover the back of the negative. Drain and dry the plate horizontally, at a temperature of 140° Fahr. While still warm, place it in the printing-frame, the image against the glass; expose to daylight until the coating has become insoluble in the shaded portions. A photometer may be used. The plate is again heated to 140° F., and in artificial light; then apply with a soft brush very finely powdered graphite, which adheres only to those portions which have not been acted upon by the light. When the retouching is sufficient, expose the whole to collodion in a strong light, and wash until the yellow tint disappears.—*Photo. Woch.*

A New Collodion Emulsion; a Step Backward.—It is announced that Dr. Hill Norris, president of the Birmingham Photographic Society, and Mr. Albert, the well-known photographer of Munich, have discovered, each independently of the other, a method of obtaining a collodion emulsion giving plates as sensitive as those made with bromized gelatine. It is said that Mr. Albert has already introduced these plates, and that, besides, they are isochromatic. But why return to collodion, to gun-cotton, or pyroxyline, whose manufacture and storage are so dangerous?

The curious feature is, that these new plates, without being tinted to render them isochromatic, only have, according to Dr. Vogel, *one-tenth* of the sensitiveness of gelatine plates.

Stellar Photography.—The astronomer, Professor H. C. Vogel, has just finished the preparatory work for making a chart of the heavens. It was necessary first to prepare a network destined to be used on the prints, in order to facilitate measurement. After having tried several methods, a good result was finally obtained by making use of plates of silvered glass, on which the network was traced by means of a ruling machine.—*Moniteur.*

The Application of Photography to Natural History.—In the Berlin Botanical Garden the rare plants are photographed at the time of flowering, and prints are sent to the other botanical gardens of the empire. —*Bulletin Belge.*

On the Choice of Photographic Lenses.—Dr. Vogel advises the amateur to choose an aplanatic (anti-planetic, euryscopic) objective, whose focus shall be equal to the greatest dimension of the plate; he recommends, besides, the use of a wide-angle objective, whose focus should not exceed the half length of the plate.

[*Translated for The Philadelphia Photographer* BY MRS. ELLA JELLIFF.]

STEREOSCOPIC PHOTOGRAPHY FROM THE AMATEUR'S POINT OF VIEW.

SINCE a discussion concerning the making of stereograms was once touched upon in these columns, the present author believes —he having been for a long time engaged in this department, so exceedingly interesting to amateurs—that the attention of a wider circle may be turned toward some experiences and reflections met with by him. In this he is also governed by the hope that the difficulties which still beset him here and there may, by mutual communication, be easily overcome.

What concerns the apparatus most nearly is, that every camera is arranged to take stereoscopic pictures without difficulty for plates 13 x 18, 12 x 20, and upon condition for those of 12 x 16.5 cm., if its case has not been too much reduced from the beginning. By putting in a partition-wall it is possible to obtain useful stereograms by means of a single objective of about 15 cm. focal distance from immovable objects through successive pictures by moving the objective. The only condition to be regarded in this is, that the ground glass must be placed exactly parallel to the oblective-board and must remain so; therefore, a focussing contrivance with double rack and pinion —special for stereoscopic photography—is preferred to a spindle motion in general.

The use of two objectives is, of course, more advantageous in each case, and in taking moving scenes it is generally unavoidable. Here it is that the matter of expense makes itself unpleasantly noticeable. Therefore, if one considers that in the use of dry plates, objectives weaker in light, for instance, simple landscape lenses, will answer the purpose fully as well, then no amateur need find the cost an insuperable hindrance. In point of fact, the author uses with best result two simple landscape lenses of 18 cm. round focal distance for his stereoscopic pictures. Of course, in this rather too great focal distance, the distortion of the lenses is scarcely noticeable, even in architectural pictures, since in stereoscopic pictures only a small part of the picture-plane is used. But even in shorter focal distances the mistakes in drawing effect little or no harm. Only the smallest stereoscopes possess lens combinations without distortion of the actual picture, and in these stereoscopic glasses are most frequently used—these glasses being cut from one and the same biconvex lens. Even then the distortion is very perceptible, and the lines at the edge of the picture are indistinct. The mistake in drawing of a simple objective is just the reverse and is, therefore, at least, in great part, saved from the picture-faults of the stereoscope. Even an architectural picture strongly misdrawn in itself and taken by a simple objective of short focal distance, will, therefore, appear more correct in most stereoscopes than if it were taken by a properly drawn aplanat. So long then as the greater number of existing stereoscopes are not arranged upon optically correct principles, it would be useless to use properly drawing objectives for the taking of stereoscopic pictures. It follows then, that if it is not exact instantaneous pictures that are required, simple objectives will answer just as well, especially as no double objective can equal them in the clearness of the pictures. Moreover, in case of need, instantaneous pictures can be taken with the ordinary simple objective, and this would be still more the case if small simple lenses were constructed especially for this purpose, upon the principle of the newest Jenens' glasses. This is a point which, as it seems, has not yet been presented to the mind everywhere. Strong, light, smaller, simple objectives, especially for stereoscopic pictures, are still missing in the catalogues of optical institutes (in the latest catalogue of W. Busch, in Rathenow, appears a notice of simple objectives placed together for stereoscopic pictures). In the usual proportions of the stereoscope, objectives of 15 cm. focal distance in 65 mm. axle distance, would give pictures with an effect the truest to nature. In order, therefore, to obtain more foreground in the picture, which, in stereoscopic views, essentially increases the plastic effect, it is frequently the case to reduce the focal distance

to 10 cm. Then, however, the picture viewed in the stereoscope does not give the impression of reality any more. Still more is this the case, if at the same time the distance of the objectives is increased. In very many stereograms found for sale the latter is done, especially in city panoramas. Such pictures appear, however, in the stereoscope not as pictures from nature but as from an elegant model, and the more distant objects also make an exaggerated plastic effect, which is opposed to the reality. I recommend, therefore, that both objectives be fastened, once for all, to the objective board at a centre distance of 80 mm. It would be best to make this distance equal to the eye distance—thus about equal to 65 mm. But the stereoscopic pictures are then too small for direct print, and must first be enlarged. If one wishes pleasing plastic effect, such as is afforded by nature, he can attain this object in inanimate objects by moving the objective board, supposing that the plate is of sufficient size. Still another important point is the objective shutter. Since I do not often undertake proper instantaneous pictures with any weak light objectives, I have constructed for my own use a simple folding shutter, which is distinguished for its convenience and truth, and by which I, standing near, can obtain an impression which is quite intelligible without anything further. The whole shutter works so easily and quickly that it is possible with very little practice to obtain instantaneous exposures without difficulty. Likewise by opening the flap and letting it play a little the foreground can be exposed longer and so forth. Any one can contrive a similar one.

Now what concerns to the production of paper copies, there is little to say. The two pictures must be cut apart, laterally reversed, and pasted upon the cartoon. Should the pictures overlap each other it becomes necessary to apply the cutting pattern and to take as level not the foreground but the background, a point which is of importance for increasing the effect, especially in glass stereograms. Brilliant copies generally work better than dim ones, because in the latter the paper-fibre is more strongly perceptible, and disturbs the air-perspective of the background. Moreover the sky and a misty distant view do not show to advantage in the finest paper pictures, since the texture of the paper, at least for sharp eyes always occasions a delusion concerning the distance. Every amateur will, therefore, soon arrive at the desire to make glass stereograms. He attains this object in the safest way by using chlor-silver gelatine plates. Only in this case, in order to obtain sharp copies, both the negative and the positive must be taken upon looking-glass, and, besides, it is necessary to have a particular copying frame so that in exchanging the two pictures they can be brought to the right place in the positive plate. The transfer process with chlor-silver collodion could furnish handsome glass stereograms. As is known, for this a light sensitive paper is prepared, in which a strong rough paper is provided, first with an easily soluble gelatine coating, and then covered with collodion in the coating-frame. Upon this paper then a direct copy is produced, which is allowed to become very strong, then toned in the acid-gold bath to the desired shade, fixed, and quickly washed. Now a glass plate of the same size as the stereoscopic cartoon, well cleaned and perfectly free from blisters and fog, is covered with white of egg solution, the washed stereogram laid in the right position with the picture side up and pressed by means of a filtering-paper pad with a squegee. Before the picture is quite dry it should be laid in water of 88°. This coagulates the white of egg, the gelatine is dissolved, and the paper can be drawn from the glass plate without difficulty. Upon this (the glass plate) only the collodion pellicle with the picture remains, and is held fast by the albumen, or rather *should* be held fast. Herein lies the difficulty of this process. Nearly always the collodion skin comes, at least, partly loose before all the gelatine is washed away, then it curls and tears easily in the smooth strips. This is especially so in stereoscopic pictures, where one has to deal with two obstinate collodion pictures at the same time—a disagreeable circumstance. Experiments which I undertook in order to settle the albumen solution with gelatine or raw collodion made insoluble by means of chrome

alum, were still less satisfactory. Perhaps one of my readers may be able to give advice on this point. This is much to be desired for all other operations of this process are so simple, that one can only wish for it, and a successful stereoscopic picture of this kind surpasses in sharpness, transparency, loveliness of texture, and brilliant tone, all other methods attainable, and can be done, moreover, very cheap. For the protection of the picture, which is seen properly through the glass, it should finally be bound with a ground glass, or one coated with "substitute." Upon the front side is pasted a mask of smooth black cartoon, the surplus of which incloses equal parts of the background. If then the glass is not too thick, the stereogram will make in the stereoscope the same impression as when one sees the brightly illuminated landscape from a dark room through a window opening. Glass stereograms are obtained more easily, and if only single copies are treated, more quickly by the carbon process, yet these are far less delicate, but for statues and similar pictures in which very fine details are less apparent, they always yield excellent results. The use of the carbon print is, moreover, rendered difficult by this, that pigment papers adapted for diapositives, at least in the smaller towns, are difficult to find in the trade.

If one desists from direct print, then copies can be produced in the following manner by means of the camera upon wet collodion, white of egg, or gelatine emulsion plates. Instead of the ground-glass in the camera, which can be drawn out far enough, a little frame is pushed in, which contains the stereoscopic negative with the picture-side turned to the camera, and the opaque glass standing 1 cm. from the negative. A stand is placed in front of the objective of the camera at a corresponding distance, and this can hold a case 18 x 13 cm. Between the case and the objective-board is produced, in some way, a light-tight tunnel with partition-walls. I, myself, use in the simplest way, a second camera, out of which the objective board has been taken. Now, behind the opaque glass and the negative a bright lamp is placed and set up by moving the case-boards in the camera. This is, with the weakness of light in the simple objective, rather difficult, but can be easily done, if the opaque glass is taken away sideways from behind the negative during the setting up. When set up sharp and to proper size, and the opaque glass again brought behind the negative, the light-sensitive plate is laid in the case and brought to its place. I assume in this that the work is done in the evening in the half-dark room. Now if the lamp has been removed from behind the negative, the holder can be easily drawn out. Behind the negative a small candle or spirit-lamp can now be placed, and a piece of magnesium band kindled at this. The length of the latter depends upon whether the picture is enlarged and in what degree, and, further, upon the light strength of the objective and the sensitiveness of the receiving plate. If the latter is a brom-silver plate of medium sensitiveness, for instance, a Herzog plate, then in the projection of the picture to the same size through an objective of $\frac{1}{13}$ aperture, 0.5 magnesium band will suffice. The magnesium flame should be moved back and forth in front of the dull glass at a distance of 10 cm., so that this in its whole extension is irradiated nearly equally as strong; after a little practice this can be done very well. Now if the plate is developed with iron oxalate a very fine glass stereoscopic picture is obtained, which when cut to the proper size must be provided with a protective glass in front, and with ground glass at the back. The former can be spared, if one projects through the glass of the picture-plate, which of course must be quite clean. Certainly in setting up, regard must be had to the thickness of the glass. If chlor-silver-gelatine plates are used for taking the picture, the picture takes on a distinctly finer tone, only a more intenss lighting will be needed, and at least 2-3 mm. of magnesium band must be burned. This is the case if one projects upon wet collodion. In the use of white of egg or collodion dry plates the exposure will have to be done by daylight.

Both pictures of a stereogram in this projection process come of themselves into proper opposite positions, since each objective inverts its picture. Since a small en-

largement can be easily obtained here at the same time, the stereoscopic picture could be taken upon plates 12 x 16.5 cm., whereby the whole picture apparatus turns out right handy. I am now planning to construct a handy camera for this sized plate, which can take both stereoscopic pictures and single pictures (cabinet), and can thus be used easily and conveniently for the projection of stereoscopic pictures, according to the above process. Should this purpose succeed, I will find opportunity to refer to it.

In order not to make this article too long, I found it necessary, here and there, to make use of as few words as possible, especially where it treated of things generally known. One thing I might still remark—that in the production of the positive from the projection process the faults in drawing of the objective are nearly equallized, since the sharpness of the picture takes away from the edge. But so long as the picture angle remains as small as in the stereoscopic pictures, this is not perceptible, and so much the less if at the same time an enlargement takes place.—*Photographische Rundschau.*

ON THE PRINTING DENSITY OF NEGATIVES.*

BY LYONEL CLARK.

A FULLER title than above will, perhaps, better explain the scope and intention of the present paper. The point I especially wish to raise discussion on is the particular quality of negative, as far as regards the thickness and gradation of deposit, that will best suit the different printing methods most in vogue.

We, of course, all know that a considerable latitude in the character of the negative can be compensated for by skill in the manipulation of the chosen positive process; but it is not in my province to-night to go into that. I merely wish to ascertain the particular average quality of negative that will give the best print on any desired positive process, this latter being worked strictly in accordance with instructions—mechanically so to speak.

Let us consider what a negative really is. When light, followed by a developer, acts on the sensitive film, we know the film is darkened; if the light be stronger, or the time of exposure longer, the darkening of the film will be greater, and within certain limits, the longer the exposure the darker the resulting deposit. So that, given a correctly-exposed negative of a well-lighted scene—that is, one giving a good gamut of tones between the darkest shadows and the highest lights—the negative of this scene will under development go on darkening proportionately up to a maximum point, that point being limited by the nature of the film. Now, I may say that even on the thinnest and most starved plate, with a sufficient exposure, this maximum amount of darkening will be too great for almost any printing process.

I know that it is a common complaint that it is with many plates almost impossible to obtain density; but this is really due to under-exposure—the light has not had time to do its full work; at the same time it is, of course, possible to get a thin image through over-exposure; that is to say, the high-lights may have suffered partial reversal, a well-known concomitant of over-exposure. But, as a rule, thinness will be found to result from under-exposure.

It is a common thing to say, looking at a thin negative, that it is over-exposed; and looking at a hard black and white negative, that it is under-exposed. But this is only correct in part. In the over-exposed negative we could have got any reasonable amount of density, but unfortunately it would have been nearly equally dense all over; for in all such negatives the deepest shadows will probably have received a sufficient exposure for them to blacken up to the full density of the high lights, which may even be reversed, or partially so, and consequently, on development, fix out thinner than the half-tones, and the picture would tend to print out wrong way about. We practically know that by continuing the exposure long enough we can reverse the whole image and obtain a positive from a positive or a negative from a negative.

On the other hand, a hard black and white negative is not really black because it was under-exposed; on the contrary, those parts

* Read at the Camera Club, London.

which have developed black were at least fully exposed, or they would not have blackened to that extent. What has really happened is that we have allowed, whilst waiting for the under-exposed shadows to come up, the higher lights to obtain too great density, and the resulting negative is too dense or hard.

But even in the case of a correctly-exposed negative it is possible to get a very great variation in density. We have seen that the density depends on the thickness of the deposit left in the gelatine film after fixation. Now, if we imagine the molecules of which the deposit is made up to be bricks, we can say that in the thinnest part it is one brick thick, in the half-tones ten, and in high lights twenty bricks thick, and so on; and we can lay out a diagram in which the number of bricks will denote the thickness of the deposit, and if we build up the number of bricks corresponding to a certain time of exposure or intensity of light, which is the same thing nearly, on a line representing that exposure, we can draw out a curve giving us the value or thickness of deposit due to any particular exposure.

The curve I show you is taken from a sensitometer plate, prepared by Captain Abney, made after Mr. Spurge's method.

Here the vertical lines represent equal increments or periods of exposure or light intensity, and the vertical line shows the amount of density that the plate received from that exposure.

Now, let us expose a piece of sensitive paper behind such a sensitometer, and watch its behavior. The paper under the thinnest square will commence to darken at once, that under the next dense will then commence to show signs of exposure, and so on, square after square. Now, after a certain time the paper under the thinnest square will have obtained a maximum blackness, beyond which it is not capable of going; the only effect after long exposure will be to bring the portion under the next square up to an equal blackness.

On examining the paper under the rest of the squares, we shall find one square under which the paper remains uncolored, the opacity of the sensitometer at this point having been sufficient to stop all light action.

We could, of course by a longer exposure get this square and the next, and, indeed, every square to print out, but what would be the result? At the opposite end of our sensitometer the paper under all the lower squares would have darkened up to a uniform blackness. This is certainly not a desirable effect, for if our sensitometer were a negative of a picture, it would mean that all the detail in our shadows would have been brought up to one density and so destroyed.

Therefore, as soon as the clearest part of our sensitometer screen, equivalent, of course, in our negative to the deepest shadows, has let enough light through to darken our print to the utmost blackness required, we should at once stop the exposure. I am, of course, imagining that the process used will not lose any of its intensity or blackness by after-treatment.

Now, on examining this print we have a clue at once to the density that our negative should have—in fact, more than a clue, an absolute and infallible guide. For it is very evident that if any portion of our negative is denser than the particular square which, in the above experiment, left the paper under it uncolored, or nearly so, we shall not get it to print out at all, unless we allow the bottom squares to become over-printed and uniformly black. On the other hand, if we stop our printing when the first square, that is the thinnest one, gives us maximum blackness, the details in the high-lights will not be represented on the print, but show large patches of white.

We are, therefore, fixed between these two points, and all prints from a negative which has a greater range of gradation, or what is the same thing, a deposit denser than the critical square of our sensitometer screen, which we saw limited the darkening of our sensitive medium, will be useless for the particular positive process we are using.

Some sorts of paper may show a wide range; that is they will show many intervening squares between blackness and whiteness, and the curve if plotted out will be long and flat, whilst other papers may show but little gradation between the two extremes, and their curve will be short and sharp. Of the former kind we should at once say that it requires a denser negative,

that is, one having a long gamut of gradations, from clear glass to a most opaque deposit, to get the best results. Of the latter we should say that it requires a thin, delicate negative, with but slight gradations between the shadows and the high-lights. If we know the light-resisting power of each separate square of our sensitometer, we can, by exposing under it the particular positive process we wish to examine, and noting the difference between the squares corresponding to white and black on the print, mathematically express the maximum density and range of deposit that our negative should have to suit the process under examination.

I propose to examine with a sensitometer the particular density of deposit that will best suit the following printing processes:

In Printing-out Papers.

1. Ordinary albumenized.
2. Plain salted paper.
3. Obernetter silver-chloride.
4. Platinotype, developed hot.
5. Platinotype, developed cold.
6. Willistype, X or brilliant paper.
7. Willistype, Y or soft paper.
8. Pizzitype.

Of Developable Papers.

9. Ilford rapid bromide.
10. Ilford slow bromide.
11. Ilford alpha bromide.
12. Fry's argentotype.
13. Eastman bromide.

And I propose to try and determine the particular kind of negative that will best suit each of the above printing processes, working these processes strictly according to their instructions, and using an average light. I mean by that for printing-out processes an average diffused light, and not sunlight, and as regards developable papers an ordinary gas-light, not lime or magnesium; for the value of the light has a very important bearing on the nature of the curve of intensity—indeed, this phenomenon is well worth much more serious investigation than the scope of this lecture allows. Practically it is known and admitted, for every beginner's book tells you to print a dense negative, that is, one with a slow intensity curve, in the sun, whereas a weak negative, that is, one with a rapid curve, is to be printed in very weak light.

Although not generally so admitted, this is equally true of negatives, and the effect on a dry plate of a short exposure with a large stop is not the same as the effect of a long exposure with a small stop. Although the light be constant, the product of the "light intensity by exposure" is certainly the same, but not the effect as regards reduction of the silver salt. I mean thereby that an exposure of 1″ with a $\frac{1}{8}$th stop is not equivalent to an exposure of 64″ with a $\frac{1}{64}$th stop, although by calculation the product of the two will be the same.

The action of a fogged negative on printing paper is a similar phenomenon. If it were not so, a fogged negative should print exactly the same as a clear one, only requiring a longer time, that is, supposing the negative has proper gradations, for then the fog would only represent the addition of a light-resisting deposit over the whole negative equally. Even different samples of gelatine may affect the prints. Every one knows the good printing qualities of a collodion negative, for this vehicle is particularly clear in the dark shadows, whilst, at the same time, the deposit that corresponds to the high-lights is also more transparent.

These differences of foggy images, muddy gelatines, etc., are, I admit, more scientific than practical, and not likely to cause trouble; but still the differences undoubtedly do exist, and all who have had any experience must have remarked how often certain negatives will give better prints than others.

Coming again to our point, the proper sort of negative for each process. Is it to be a thin or a dense, hard, or soft one?

I had, perhaps, better state here precisely my interpretation of the usual qualifications applied to negatives. Beginning at the bottom of the scale, I call a negative—thin, feeble, or weak—one which has no gradation between the lights and shades; in fact an over-exposed, undeveloped plate. A flat negative would be the next stage, that is, a fairly good negative, but not quite strong enough in the high-lights. We then get the good negative, usually qualified with the adjectives, "bright," "spark-

ling," that is, one properly exposed and properly developed; going further on, a negative will be called, first "brilliant"—this generally signifies that density has been slightly overdone; then "hard," or "black and white," generally signifying a negative that has been under-exposed in portions and over-developed in others, commonly called an "under-exposed negative."

We then get the "dense negative;" this is one where, although exposure is correct, or erring on the "over" side, development has been carried on too far, and the high lights have obtained the maximum blackening that the silver salt is capable of assuming. The deepest shadows will be full of detail, not fog; and there may not be even small portions of clear glass. The same result will generally be got by over-intensifying a brilliant negative.

The last kind of negative must not be confounded with a foggy negative—a condition that can obtain with any of the above types, and will alter the printing rate or rapidity of the negative by reducing the light intensity, and, therefore indirectly, affect the intensity curve of the negative; in fact, the result will be the same as printing through a colored glass, which has the effect of hardening the negatives and giving a longer and slower curve. All who develop with dry pyro and ammonia know how thin these yellow-stained negatives may appear, and yet give most excellent and vigorous prints.

The following sets of proofs are the results obtained from the sensitometer, and on the blackboard they are laid off in curves; but these curves must be more or less unintelligible to the majority, and some explanation will be necessary. I must presume some knowledge of negatives on the part of my audience, and I will, therefore, take as a basis the quality of negative that will give a good silver print. Silver-printing is, I think, the most generally practised, and most of you are, therefore, likely to know the gradations of negative that best suit this process.

Taking, then, a good silver-printing negative as our standard, we will assume that the number of gradations of tints from the clear shadows to the densest high-lights of our negative to be 100. Then from the mean of several experiments I find that *plain paper* requires 83 gradations.

Obernetter paper, on the other hand, requires 108 gradations. That is, that a negative suitable for plain paper should be less dense than one suitable for silver, whilst a negative for Obernetter's gelatino-chloride paper requires a denser negative than a silver one. It is, however, difficult to accurately gauge the results of these papers; owing to the sunken appearance of the image in plain paper and the high transparency of the Obernetter paper, comparison is not very accurate.

Of the *platinotype* papers, the ordinary process requires as nearly as possible the same quality of negative as a silver print, providing the shadows are clear; if any fog be present, a very much denser negative is required; indeed, if much fog be present, it will be nearly impossible to get good results.

The *Pizzitype* requires an exceedingly dense negative if anything like absolute black is required, some 300 or 400 gradations at least.

Of Mr. Willis's new papers, or *Willistype*, as I will call them, the X or brilliant paper requires a negative less dense, the proportion being as 80 to 100, whilst the Y or soft paper will take a negative twice as dense, that is, with 200 gradations.

Comparing, now, the developable papers, we find that *Fry's argentotype* requires the thinnest negative—one equal to about 66 gradations; the Eastman next, with 77 gradations. The *Ilford rapid* gives the same result as the Eastman; whilst their *slow paper* requires a slightly-denser negative—one equivalent to 80. Lastly, the *Alpha* gives the best result with the same negative that will give a good silver or platinum print. This latter paper, however, owing to its peculiar composition, is very difficult to classify. By varying the quality of the light to which it is exposed, an endless variety of curves may be obtained, *whilst variations in developer produce many more*. Resuming the whole of the above, we may say that a good, fair negative will give us, without any dodging or manipulation, good prints, equally, on *albumenized*, *plain-salted*, *Obernetter*, *platinotype*, and

Alpha papers. For a thin negative we should use, if very thin, *argentotype*, then *Eastman* and *rapid Ilford*, then the *slow Ilford*, and of the printing-out papers, *Willis's X paper*. On the other hand, for dense negatives, the only developable paper likely to give good results, without dodging, is the *Alpha*. Of printing-out paper, the ordinary *platinotype*, fully exposed and developed cold, gave good results with dense negatives, but this cold development rather comes under the head of dodging. *Obernetter paper* was also suitable, and for very dense negatives the Pizzitype and Willis's Y paper.

As a sort of proof of my deductions, I have also prepared a series of prints from negatives, which may be classed under the head of thin, brilliant, and very dense. The Willis X paper appears to me to give the best results with the thin one, whilst the Willis Y gives the best result with the dense ones. Of developable paper, the Ilford slow and Alpha give the best results with the brilliant negative. But it must be clearly understood that these papers are treated mechanically, exposed, and left to develop up to the maximum density, etc.

Whilst on the subject of these papers some remarks on their relative rapidities may be useful. It is quite clear that by the system I have used in my experiments, the time of exposure has no effect, the curves being simply measured from the density of deposit, and not from the time the light acted. But it was, of course, necessary for me to find out the relative rapidities, and I give them to you. We can measure the rapidity of a plate in several ways—by exposing it under a sensitometer to an equal light for equal time, and noting the last square of the sensitometer readable; or the system I prefer and have used, of exposing it to a constant light for different periods of time, and comparing the periods necessary to produce a maximum darkening of the film.

I find the following rapidities, assuming Ilford rapid as a standard, requiring ten seconds' exposure at 2′ 6″ from a ten-candle gaslight. Then Eastman will require 30″, Argentotype 60″, and Alpha bromide slow 240″.

We now come to the question of the best kind of paper for enlarging upon. This is a question that so much depends on the intensity and quality of the light at one's command, that it is extremely difficult to lay down any rules.

But, speaking generally, it may fairly be stated that a thin negative should be used, as in London, at least, one rarely has too good light; and with artificial light a thin negative is almost imperative if paper be the medium used to enlarge upon.

If, however, a somewhat dense negative must be used, then the most rapid paper obtainable should be used, such as Ilford rapid, or Eastman, or Fry.

It must, of course, be understood that the quality of the different papers under consideration is not touched on in these experiments; that must be a matter of individual taste.

Having done my best to settle the amount of densities which the negative should have, a few words are necessary as to the method of obtaining this amount at will. To describe this in words I am, I confess, fairly nonplussed. Every different brand of plates gives different appearances under development. Generally speaking, it is safe to see the image well out on the back before stopping development, but, of course, watching the effect by transmitted light is the best, although difficult.

I can only recommend beginners to experiment; let them throw away a dozen plates on a subject, giving the same exposure and same developer, but stop development at different stages, noting carefully the appearance of the image; after fixing, expose the resulting batch at one time over the particular paper they intend to use, and noting the one that gave the best results put it aside for future reference, and always try and work up to it.

I feel assured that the time expended will not be wasted, for it is only by careful experiment that you will quickly obtain an accurate knowledge of the correct printing density of a negative.

To secure all the numbers for 1889, intending subscribers should remit promptly. We cannot undertake to supply back numbers very long.

OUR PICTURE.

The second of our "Nature Series" of pictures appears now to close the year in "The Grape-Harvest" from a 5 x 8 lovely negative sent us by Mr. E. K. Hough, Fredonia, N. Y. Mr. Hough is one of our veteran artists. He was in business many years in this city, and has also spent many years in the tropics. He retired from active studio work some time ago, but still practices under the great round blue skylight of the heavens. He has some interest, too, in grape culture, and gives much valuable information concerning it in the accompanying article. "The Grape-Harvest" is a very suggestive picture for the closing number of the twenty-fifth year of the Philadelphia Photographer. It is typical of culture, patient waiting, and of an abundant harvest for man's benefit. So may we all follow the example of the productive, well-trained vine, and gladden the ones for whom we work. The lovely prints were made by the Photogravure Co., 853 Broadway, New York.

CHAUTAUQUA GRAPES.

BY E. K. HOUGH,
RIPLEY, N. Y.

If men and women must labor, the cultivation of fruits and flowers comes nearest to that ideal Arcadian life of rural elegance and ease which has been a theme for poets and painters in all ages.

Therefore grapes, as the most delicious of fruits, have furnished the motive for many of the artists' most beautiful efforts, and have called forth some of the finest fancies of the poets; and certainly the growing vines, with clusters of ripening fruit, and the merry gatherings at the harvest, and the vintage, far from the smoke and grime of cities, environed by the noblest emblems of peace and plenty, are calculated to throw a poetic charm around the culture of grapes, that removes it far from the dull drudgery of ordinary agriculture, and brings "it" near to Nature's heart.

Chautauqua County is already renowned as the home of that great educational and recreative summer resort, the "Chautauqua Assembly," where wisdom and pleasure are trained to travel in harness side by side, while "halls of learning" are abandoned for "lectures in the grove." It is also fast becoming celebrated for producing the finest-flavored grapes that are grown in our own country, if not in the world.

Italy and Spain, with the south of France, have always monopolized most of the poetic fame of grape culture, until California came in for a share; and it is only very lately that the southern shore of Lake Erie has acquired a national reputation for producing a superior quality of table grapes.

In ancient times, when the waters of the Great Lakes flowed southward, the present rim of hills formed the shore of the lake, but when they broke through at Niagara and flowed northward, the shrunken lake-bed left a strip of fertile land along its southern borders, varying from one to three miles wide, sloping down gradually to its present shore; in shape and proportion like the rim to a gigantic plate of soup, and thus forms the territorial and climatic conditions favorable to successful grape culture.

Lake Erie is the great controlling factor in the problem, without whose beneficient influence profitable grape growing, so far north, would be impossible; for now as soon as we pass over the rim of hills, out of sight of the lake, grapes cannot be successfully grown.

Lake Erie is the most shallow of all the great chain of lakes, being spread over a great submerged plateau which becomes so thoroughly warmed by the summer sun, that it sits like a great basin of warm water among the vines, keeping off the early autumn frosts from four to six weeks longer than just over the hills southward, only two to three miles away, thus giving the grapes a longer season to ripen their most delicate juices to full perfection.

Lake Erie also being so shallow becomes more deeply frozen and contains its ice later in the spring than the other lakes, thus keeping back the vines from starting until all danger of frost is past, preventing the frost ever injuring the growing or ripening grapes, although the young vines are sometimes winter killed.

The picture is taken in my own vineyard

of my nephew, Charles Mason, who manages it for me. The vineyard is directly on the lake shore, and contains twenty acres of productive vines.

When I came back from the West Indies in 1883, I had a few thousand dollars of "surplus" which I thought best to place outside of photography, and chose grape-culture as the investment.

It was then a comparatively new industry in this section, for at that time there were not more than ten thousand baskets produced in this town of Ripley, and now there are over a quarter of a million yearly, and hundreds of acres more planted and coming on.

Grape-vines require three to four years to first bearing, and five to seven years to full maturity.

A large part of the grape harvest—picking and packing—is done here by women, a pleasant, profitable employment from four to six weeks in autumn, and three to four weeks trimming and tying up the vines in spring. Grapes are handled with great care to preserve their freshness and bloom into market.

Grape-culture is work that can only be done by gentle human hands, guided by careful attention and intelligent discrimination in all its stages, and, therefore, no sooty machinery can ever usurp their function.

Even ladies of education and refinement do not find the labor inconsistent or uncongenial, and thousands of dollars are thus pleasantly and healthfully earned. The grape crop sells for ready cash, and at this season all business and every grade of social life feels the impulse of eight to ten thousand dollars per day infused into the financial circulation.

For, although grape-culture is yet in its infancy here, this narrow belt of country about fifty miles along the lake and only two or three miles wide, is now receiving annually over three-hundred thousand dollars distributed among its grape-growers I have travelled about the world many thousands of miles on both sides of the equator, and I have yet to find any part of it more favored or more beautiful than Chautauqua county along the shore in summer time. It never has floods, cyclones, or epidemics, and it is fanned continuously by cool breezes from the lake.

Northern Chautauqua has always been celebrated for its fruits, and now with its successful grape-culture, it becomes a veritable Arcadia.

"Fair as the Garden of the Lord," the land slopes down to the lake in fruitful farms and smiling vineyards, and is thickly studded with pleasant, well-kept homes, bearing evidence that its people are that most enviable of all classes, a prosperous and contented husbandry, independent and intelligent.

THE WORLD'S PHOTOGRAPHY FOCUSSED.

Get ready your "flash" lights to photograph the old year as it hurries out.

This issue makes the Philadelphia Photographer twenty-five years old.

An instance of "rapid development" (at least so it seems to us), is this: One of our veteran contributors writes us as follows:

"I have a little grandson, Jex Martin, who comes to see me every evening, and stays with me every Saturday night. Every evening I have to get out some of my slides, and by the help of the lamp and a sheet of paper, he looks over them and at the same time I have to give him a history of them, so that now he knows most of them. He will be five next May. He also takes great delight in photographs and pictures of any kind. He knows you by name very well. The pictures you sent me were unpacked by him, he deeming it a favor; and he also looks on my pictures as much his as mine, so when he had looked over them he says he knows Mr. Wilson must be a very good man to send his grandpa such a lot of nice pictures on his birthday, and he desired me to send you the enclosed letter thanking you very much for the same, and I had to promise him that I would send it sure. Now as a favor to me, I want you just to write a few words to him, and direct the letter so that he may get it from the postman. It will give him so much pleasure."

We are sure that a number of our original subscribers could write similar accounts of

the coming into focus of the *third* generation. We delight to see them coming, and of course we wrote the desired letter. We expect the favored grandson to become a subscriber to WILSON'S PHOTOGRAPHIC MAGAZINE some day.

THE Air Brush is used by lithographic artists largely. One was sent to Australia a few days ago for topographical use in the survey department of the government.

MR. J. W. OSBORNE, one of our early contributors, and the first patentee in America of a photo-mechanical printing process, has recently presented his splendid collection of prints to the United States National Museum, located at the Smithsonian Institution in Washington. In a letter to the *Lithographer and Printer* Mr. Osborne says:

"In the National Museum the exhibit made by the Section of Graphic Arts, as presented for public inspection and study, does not as yet include photo-mechanical processes; for there has not been time to effect a satisfactory classification and exposition of my collection. Thorough analysis of that sort is indispensable in such a case, and it always gives rise to much laborious research and comparison of dates and statements in the literary record. At present the Section of Graphic Arts embraces drawing in several styles; etching on metal plates; engraving, of different kinds, for the production of both intaglio and relief plates and blocks; lithography in various manners; color printing; and, finally, electrotyping and sterotyping, as applied to graphic multiplication. Besides the printed results flowing from the practice of these arts (many of great beauty), all the necessary tools and appliances are shown which are required in working the same, with explanatory matter in the form of labels and printed statements.

"This collection, though it covers much space and will strike every one as most instructive, is yet to be regarded as a nucleus only, about which the full display will continuously grow toward completion. As planned, we shall have in this department, in a few years, a collection representing every known process perfect in classification and in chronological arrangement, and accompanied throughout by explanatory matter which will give to every specimen a historical as well as a scientific interest."

Mr. Osborne's first works in this country were in the large building now occupied by the Photogravure Company, at Third Avenue and Tenth Street, Brooklyn, L. I., where we frequently visited him.

AT a late meeting of the London Photographic Club, Mr. G. W. Foxlee read a valuable paper upon testing photographic mounts. He said:

"My plan is to keep the face of one part of a print in close contact with the mount to be tested, while the other portion is insulated from it with an impervious material, the whole being retained slightly damp, and, if possible, in a moderately warm place. We all know that a silver print subjected to this trying ordeal will, sooner or later, succumb. But if that portion which is in contact with the mount changes quicker than the other, it is evident that the mount must be the cause of the deterioration. If, however, the picture fades evenly all over, the mount may reasonably be considered suitable for its purpose. This plan, I fancy, possesses some little advantage over that described in the *Photographic News*, inasmuch as the face of the print, instead of the back, is in contact with the mount, so that the effect, if any, is produced with greater rapidity. Furthermore, no mountant is used which might prove a bone of contention. In the recent suit, Biddle *versus* Fry & Co., it was contended that starch was an improper cement to use with the mounts in dispute.

"The procedure I adopt is as follows: Take a light print, made preferably from a thin negative, and damp it, together with a piece of pure paper, such, for example, as Joynson's writing paper. Now, on the mount to be tested, put two or three thicknesses of paraffined paper so as to cover, say, one-half of it. Then place on the print, face downward, on that of the writing-paper, and secure them in position with a couple of paper fasteners. Next back up with a pad of damp, not wet, blotting-paper, and

place between two pieces of glass to prevent the moisture evaporating, and put under heavy pressure.

"The print should be examined daily. Sometimes—in an hour or two even with some mounts—the print will show a stain from soluble color diffusing itself from the mount."

At a late meeting of the Bath Photographic Society, Mr. Friese Green, in lecturing upon "The Effect of Electricity upon a Bromide Plate," said:

"Now, I am going to tell you something that has never been mentioned before: I am going to tell you that I can photograph the voice. I was only sure of it last week, so I could not notify it in my paper; but I'll show you how it is done, that you may be able to do it yourselves—it is so simple. You get a piece of parchment and stretch it like a drum, then stick on the centre a very thin piece of silver-polished glass. Now have a ray of light coming through a pinhole, with a piece of talc colored green in front of it. Let the ray of light fall upon the polished silver-glass, then the reflected ray upon a sensitive plate, which is gradually kept moving at a distance of three feet from the silver-polished glass. Now speak to the drum behind the silver-polished glass, and the vibrations of the parchment diaphragm caused by talking to it will be recorded on the sensitive plate after developing. Different voices will give different vibrations. So now you can see photographing the voice is not such a mystery as we might imagine. I have not mentioned this to any one, because I thought this Society should be the first to hear of it.

"Now for the first experiment. Down upon my paper is the effect of electricity on a bromide plate in different solutions, and in a vacuum. The first thing I do is to put a bromide plate (any bromide plate will do for this experiment) into a weak solution of hydrochloric acid (2 drachms to 10 ounces of water). Now put a piece of silver (I'll use a shilling, as you will all be able to recognize the impression, I expect) on the film. Then take the positive wire of a battery, to which is attached a piece of platinum, and put it in the solution. Now take the negative wire and touch the silver with it. Leave it there for a few seconds; take the plate out and develop, and there you will see the impression of the piece of silver with which you are acquainted. Now you can get a similar effect with either copper or gold instead of silver, and instead of hydrochloric acid use ammonia, or even water.

"Now I am not going to advance another theory of the latent image, but maintain that those we have been taught are wrong. One of the principal theories is this. Light acting on a silver salt threw the component atoms of each molecule into a state of vibration; the developer separated the metal from the haloid.

"What I want to impress npon this young Society is, don't be led away by books. Photography is not very old—there is not one-millionth part found out of what it is going to do—so let each one who intends to experiment rest upon his own experiments and individuality. Never mind failures; it is by the seeking and fumbling we learn the truth. So now don't let any one sit down and think there is nothing to do in photography."

At a recent meeting of the Dundee and East of Scotland Photographic Association Mr. John Matthewson said:

"Our first object in developing must be to find out whether our plate in under or overexposed, and to do this we must commence with a solution of the normal strength of pyro and bromide, and a small percentage of ammonia. As soon as the image begins to appear experience will enable us to judge how we are then to proceed. If the plate is slightly underexposed, we must largely increase our ammonia and dilute the pyro solution; if very much underexposed, we shall save both time and trouble by throwing it amongst our waste glass, for no amount of doctoring will produce a good result from a very much underexposed plate. If we find it only slightly overexposed, we may, by a very slow development, produce a good negative with the solution applied at first. If much overexposed, we have the various ways of proceeding; we may increase our bromide, reduce our ammonia, or increase our pyro, or

we may do all three according to the amount of overexposure the plate has received.

"By adopting this method of development, with a little experience, and bearing always in mind the effects produced by the different chemicals we use, and their respective proportions, we are able to produce good results from plates which have received even five or six or ten times the correct exposure."

At the same meeting he also read a paper on "Exposure and Development." To illustrate how, by careful and slow development, overexposed plates could be saved, Mr. Matthewson showed five negative of the same subject which had received exposures of three, six, nine, twelve, and sixteen seconds, three seconds being the correct exposure. These, with prints from each, were examined by the members present, who failed to discover which had received the longer exposure.

Ah, Ha! (Henry Irving.) At last over-retouching is being found out, for, says the *Photo. News*, "The judges of the court no longer rely 'solely' upon photographs for identification."

Mr. Dallmeyer promises an early paper upon "The Brilliancy of Images Produced by Photographic Lenses." We shall keep our readers posted.

At the North Middlesex Photographic Club Mr. E. Traill Hiscock read a paper on "The Printing and the Development of Argentic Opals." After making a few introductory remarks, he impressed upon his audience the necessity of having everything used in the manipulation perfectly clean, as dirt of any sort would prevent the making of a good picture. With regard te developing, the only formula which was successful with opals was the ferrous oxalate, the directions for the making of which he gave. When developed (when sufficient briliancy in the shadows has been obtained), he advised the washing of the plate with cotton-wool, and thus remove all traces of the iron. To fix, he used a solution of three ounces of hypo to the pint of water, and allowed the picture to remain in this bath from ten to fifteen minutes. After having eliminated all the soda, the plate is cleared in a bath of one-quarter of an ounce of sulphuric acid to a quart of water; it is then again washed and dried. In order to illustrate his remarks, Mr. Hiscock printed and developed an opal, obtaining a most perfect result, which was greatly admired by the members.

Mr. Stewart spoke of the autotype and transferrotype processes.

Ruskin on the Art of Painting.—The following remarks are perhaps quite as applicable to the art of coloring a photograph as to the work of the artist who constructs a complete picture by the brush. We qoute from the fourth appendix of *The Two Paths* (the 1859 edition), which is itself illustrated with a frontispiece copied from a daguerrotype: "The art of painting, properly so-called, consists in laying on the least possible color that will produce the required result, and this measurement, in all the ultimate—that is to say, the principal—operations of coloring, is so delicate, that not one human hand in a million has the required lightness. The final touch of any painter properly so named—of Correggio, Titian, Turner, or Reynolds—would be always quite invisible to any one watching the progress of the work, the films of hue being laid thinner than the depths of the grooves in mother-of-pearl. The work may be swift, apparently careless—nay, to the painter himself, almost unconscious. Great painters are so organized that they do their best work without effort; but analyze the touches afterward, and you will find the structure and depth of the color laid mathematically demonstrable to be of literally infinite fineness, the last touches passing away at their edges by untraceable gradation."—*Photo. News.*

The amateur exhibition of the Plainfield Camera Club was such a success, and the attendance so large, that the members decided to keep it open a second week. The great merit of the collection in every way has been heard of everywhere, and delegations of amateur photographers from the Elizabeth Club, Cranford, and other places, visited, admired, and learned something from the Plainfield Exhibition.

Mr. Charles H. Davis had the largest ex-

hibit (over seventy photographs), the most varied, and the most admired. The best of the work he exhibits is done entirely by himself. Enlarged bromide prints of Miss Jennie Eustace and baby Day, from negatives by Mr. Davis, are also shown. Among his portraits, that are all so faultless in their pose, is "A Bud (or rather a blossom) in the Apple-tree," made famous by its reproduction in the PHILADELPHIA PHOTOGRAPHER, the censor of the craft. Among the pictures of distinctive interest are views of the interior of Mr. Davis's studio, and of his observatory, with its valuable Clark equatorial telescope.—*Plainfield Daily.*

MR. J. A. MALONEY, after describing in the *New York Medical Journal* and *Science* some interesting experiments on the conduction of sound vibrations by the bones of the skull, asks: "May not color-hearing, in view of the readiness with which the sphenoid bone takes up and delivers vibrations, be due to mechanical stimulation of the optic nerve by the impingement upon it of the sphenoid bone in its passage through the optic foramen?"

THE PRINTER'S CORNER.

WE see our letter in regard to spoiled prints noticed in the November 3d issue of your journal.

We solved the "mystery" the same day we wrote you, by placing one of those prints in a printing frame and exposing one-half to the light. The exposed portion showed plainly the presence of silver.

We are "allee samee" obliged to you, though our thanks come a little late.—W. H. F.

LEAF PRINTING.—Several requests have come for Mr. Rockwood's process for "blue" leaf printing. By his kind permission we add it below:

While the results from "silver" printing are charming, the process is often impracticable in the hands of amateurs, not so much from its complications, as the liability to black stains on the hands, clothes, and the general untidiness produced by the nitrate of silver. For many purposes the beautiful blue process is quite as good, while its perfect simplicity, both in the preparation of the sensitive paper and the final development of the picture, makes it very desirable. The paper can be purchased at any art material store, or easily made according to the following formula:

No. 1.

Red Prussiate of Potash .	1 ounce.
Water	10 ounces.

No. 2.

Citrate of Iron and Ammonia	3 ounces.
Water	10 "
Gum Arabic or Dextrine .	½ ounce.

Use equal parts of Nos. 1 and 2. Keep these solutions in separate, light-tight, well-stoppered bottles.

The function of the gum arabic or dextrine is to keep the sensitizing solution on the surface of the paper, the quantity used depending upon the quality of the paper—hard, firm paper requiring little; soft, porous paper, more. As the iron and ammonia solution undergoes change when kept, it is better to have the salt in the dry state in a well-stoppered bottle, making the solution as needed. In preparing the sensitized paper, take a solid, firm paper, free from impurities, and apply the solution to the surface of the paper with a soft sponge, or a broad, soft brush, being careful not to have the sponge or brush charged too heavily with the solution, or else the paper will have streaked appearance, which will show in the finished print. Go over the surface of the paper in two directions at right angles to each other, to insure an even coating. The sensitized paper must be allowed to dry in the dark, and in a horizontal position.

Having prepared, in a dark room, a sheet of paper as above, lay it upon a piece of glass; place upon the glass a leaf as translucent as can be found, and then above it, to hold it in place, another piece of glass, and at each corner a "clip," or a common spring clothes-pin. Now expose the plates so arranged, leaf side up, to the sun's rays. The paper will at once begin to darken, and in from five to ten minutes, except under the leaf, be dark brown. If the plates are

now taken into a dark room and separated, the image of the leaf, with all its delicate tracery and beautiful lines, will be found upon the paper, white with brown background.

It will now be necessary to soak the print in a dish of clear water for a few minutes, and thus wash off the unaffected chemicals remaining upon the surface of the paper. A half hour's soaking, with one or two changes of the water, will effect this so that the prints will be permanent and of a beautiful blue color. Practice, carefulness, and neatness make perfect.—G. G. Rockwood, 17 Union Square, New York.

After reading the Philadelphia Photographer of Nov. 3d, page 653, it is evident to me that I am not alone in my troubles about printing. Your Ohio correspondent presents the same experience I had a short time ago. In relating my difficulties to different photo printers, that I made an effort to come in contact with, some one dropped the remark that it might be over-silvering. That was a new idea; something I had not thought of. As I had always silvered from two to three minutes on a sixty or sixty-five grain bath I did not expect very favorable results.

However, I had tried everything else and I resolved to try less silvering. I reduced my bath to forty grains, and my time of silvering to forty-five seconds, and, oh my! did'nt I smile.

This may not be the cause of the trouble in the case of your correspondent, but will you please forward him this letter and ask him to let me know of his results.—F. A. Skinner, Plymouth, Mass.

[We add the letter here for it may help many correspondents.—Ed. P. P.]

I have been wanting to send you something new in my line for the "Printer's Corner," but not having worked regular of late, I have nothing to say further than that I find the water in so many wells and cisters unfit to use for washing prints. In my tour through Arkansas, I found so many photographers complain of the water in which they washed their prints, although the water seemed apparently clear, some just complain of scum on albumen prints in first wash, not knowing the reasons or causes of the same. The water is full of manganese, which is injurious to the albumen sensitized surface. The moment the dry print is immersed in water for washing, a thick whitish scum settles on the surface, like the chloride of silver, or as adhesive to the paper such as it does when salt is used for acidification and prints are not properly stirred up and moved about. But while the chloride comes off by washing and rubbing over the surface with hands or a soft sponge, the manganese sediment adheres to the surface, destroys the toning quality of the print, and assumes an appearance not unlike hyposulphite of soda stains. The whole work from first water to fixing and washing is so tedious and slow, and the appearance of the prints suffers so much from the effects that it is advisable to discard the water entirely and use rain water cleared by the permanganate of potassium, which water will do for all the baths, developers, and other delicate purposes, and is as reliable as distilled water. I have seen printers tone for hours on a small batch of prints because the gold would have no effect upon the sensitized albumen paper destroyed by manganese in water. The only way they tone at all is by an overdose of gold, and the finished print looks as though it had just escaped from a cyclone.

A photographer recently handed me a few prints with, as he called it, black spots all over them. The prints were measly, or mouldy as some call it. I at first attributed the effect to damp paper in the fume box. He claimed that that could not be cause as his paper was dry before and after fuming. Of course the change in weather could then only be the cause, for when paper is cold the bath is cold and the paper is fumed when it has spontaneously dried, the effect will be exactly like stated, a lot of transparent spots will appear on the paper. If kept a day or two these will disappear however, and the paper can be used with good results. When the bath is cold and the paper not rubbed with cotton, tear drops will appear, and they are mean things to get rid of. I will write more next time.—Chas. F. Krauss, Memphis, Tenn.

HELIOCHROMY.*

BY FRED. E. IVES.

In my lecture, on "Some Recent Advances in Photography," delivered before this Institute in February last, I briefly described and illustrated a method devised by me for producing photographs in natural colors. I now have illustrations of the process, comprising a sufficient variety of subjects to more fully demonstrate its capabilities and value.

I claimed for this process that, unlike any similar process yet suggested, it was based upon a true conception of the nature of light and color vision, and was a strictly scientific method of accomplishing the object sought after—which is to produce, by an automatic process, pictures which counterfeit not only the light and shade but also the colors of all objects which may be photographed.

I explained how some others who experimented in this direction failed because they built upon the false theory that there are only three primary spectrum color. I recognized the fact that there are, strictly speaking, thousands of primary spectrum colors, but also that all colors, whether simple or compound, may be counterfeited to the eye by means of three type colors, separate and mixed in different proportions. I assumed that we might counterfeit all the colors of nature in a photographic picture, by making each ray of simple color select automatically, in the operation of the picture-making process, such a type color or mixture of type colors as will counterfeit it to the eye, and showed how this can be accomplished by means of photographic plates made sensitive to all colors, and exposed through compound light filters, which are suitably adjusted by experiment upon the spectrum itself.

For the mechanism of the process, and some demonstrations, I refer to my original communication, which appeared in the *Journal* of the Institute in May. I believe the problem had never before been stated with reference to the possibility and necessity of representing most of the primary colors by color mixtures, which, though not the same, produce the same color-sensation.

* Read before the Franklin Institute, November 21, 1888. Revised for publication.

In order to make clear the fact that my plan of operation is in accordance with what is now recognized as the true theory of the nature of light and color-sensation, I make the following quotations from a recently published text-book on color, by A. H. Church, M.A., London:

"Young's theory does not assume the existence of three primary colors, but of three primary color-*sensations;* a very important distinction.

"Every ray of differing refrangibility in the visible part of the spectrum is in one sense a primary color, for it is simple, and excites a definite sensation. But there are many reasons, mainly connected with the structure and functions of the eye, which have led to the selection of certain colored lights—generally three in number—as yielding primary color-*sensations*. This primariness is then not objective, but subjective in respect of human vision.

"Young's theory of color-perception amounts essentially to this, that in each elementary part of the retina of the eye there is, at least, one set of three different nerve fibrils, each of the three fibrils of a set being especially adapted for the production of its own specific color-sensation, yet in a less degree of the two others. Thus the receptive structure of the retina as a whole may be said to consist of an immense number of nerve fibrils of three orders, what we may call red fibrils, being particularly acted upon by such long light waves as those in the red, but being also stimulated in a minor degree by the shorter waves in the green, and still less by those in the blue, the green fibrils will respond most actively to green waves, and in some measure, also, to red and to blue waves; while the blue fibrils will be most excited by the blue rays, though not uninfluenced by green and even by red rays.* It follows that when all three kinds of nerve

* Helmholtz remarks, that the choice of these particular colors is somewhat arbitrary, and that any three could be chosen, which, when mixed together, would furnish white light. If, however, the end and middle colors of the spectrum (red, violet, and green) are not selected, then one of the three must have two maxima, one in the red and the other in the violet; which is a more complicated, but not an impossible supposition.

fibrils are equally and simltaneously affected, the complex sensation of white light alone is produced.

"Colored lights may be, and often are, compound, sometimes consisting of two, and often of many more differently-colored elements, although the eye recognizes but a single color in the complex ray. A striking instance is afforded by yellow. There is an elementary yellow in the solar spectrum lying on the green or more refrangible side of the line *D*. By no contrivance can we optically decompose this spectral yellow, to which belongs a definite wave-length. But there are many compound yellow lights—lights which give us, as the sum of the simultaneous visual impression of their several components, a sensation of yellow not to be distinguished by the brain from the simple yellow of the spectrum. Such a compound yellow may be formed by throwing on the same portion of a screen a part of the red light and a part of the green light of a pure spectrum. Similarly there is a pure and simple blue in the spectrum, but a blue indistinguishable from this in hue may be obtained by mingling green and violet light."

Now, although I originally worked out my process on the simple plan of making each primary ray of spectrum color select from and combine three pigment colors to counterfeit it, it becomes evident that in accomplishing this I might have produced one negative by the action of solar rays very nearly in proportion as they excite the "red nerve fibrils" of the eye, another in proportion as they excite the "green fibrils," another in proportion as they excite the "blue fibrils." I did not do this at once, but after experimenting with several sets of reproduction pigments, adjusting color-screens so that I could make the process counterfeit the spectrum with either set of pigments, I finally adopted reproduction colors which call for negatives of the spectrum showing curves of intensity approximating to the curves in Maxwell's diagram, illustrating the action of the spectrum upon the different sets of nerve fibrils. These reproduction colors are certain shades of red, green, and blue light, or their complementary colors in pigments, which approximate to Prussian blue, magenta red, and aniline yellow, the first two of so light a shade that it is necessary to superimpose one upon the other to obtain a full violet blue, the blue upon the yellow to obtain green, and the magenta upon yellow to obtain red.

When I made my first communication upon the subject, I assumed, with Helmholtz, that there might be some latitude in the selection of type (reproduction) colors, and, therefore, did not commit myself to the use of any particular ones, but merely showed how I would produce at will negatives of the spectrum having any curves of intensity that might be required in order to secure the proper distribution of such colors or pigments as were selected. The adoption of reproduction colors corresponding to what are now recognized to be the primary color-sensations, has made it possible for me to state more definitely my mode of procedure, as above.

What I claim as new and original in my method is (1) the production of heliochromic negatives by exposing color-sensitive plates through compound color-screens, which have been adjusted to secure negatives showing curves of intensity which bear a certain definite relation to the colors employed to produce the heliochromic pictures; and (2) the production of heliochromic negatives by a procedure calculated to yield negatives of the spectrum showing curves of intensity which probably correspond to the action of the spectrum upon the sets of nerve-fibrils.

Admitting the theoretical soundness of my mode of procedure, which I believe I have fairly demonstrated, there remains only the question of practicability and commercial value to be considered. The process is practicable, if the same operations, repeated in the same manner, can be relied upon to produce pictures which counterfeit the light and shade and color of all objects. Three subjects which I shall show to-night, a delicate oil painting, a brilliant Prang chromo, and a beautiful sea-shell, were made with the same light, same camera, same preparation of sensitive plates, same set of color screens, same relative exposures, and same development. They show a very great va-

riety of colors, mostly compound in the painting and chromo, but pure spectrum colors in the seashell; yet the colors of all are alike faithfully counterfeited to the eye. Although there should be no question of the fact, I will here state that these finished results have been obtained without any retouching or artificial manipulation whatever.

THE OPEN CORNER.

As to Shutters and Diaphragms.—We see by the Philadelphia Photographer of November 17th, in an article written by S. J. White—"Two Wants"—he speaks of a diaphragm and shutter combined. We will say that we have two different kinds of diaphragm and shutter combined, which work as nicely as anything could work, but we find that we cannot get a plate quick enough for an instantaneous view with it, it cutting the lines just where they cross, at the diaphragm, although we can make a long or short exposure at will, but when you come to instantaneous work with it we have not been able to get a plate quick enough. We made one for our stereoscope tubes, and it works like a top, both tubes being exposed the same instant. The only trouble is, that we are liable to work it too quickly. We have taken some river views, and the wind-ripples on the water were as perfect as if they had been standing still.

Is this quickness of action caused by the shutter stopping off the light where the rays cross? or, would a drop-shutter work just as quick. Yours,

D. Filson & Son.

Steubenville, Ohio.

In connection with this, we add the following, from a well-known expert in this line:

The last paragraph in Messrs. D. Filson & Son's letter indicates quite clearly what their trouble is. They probably have been using (before making their present shutter) a drop-shutter, and have been able to develop plates exposed with it *successfully;* but when they have a plate exposed a much shorter time they are unable to develop it, and immediately jump to the conclusion that their diaphragm (?) shutter is *immensely* quick, *because* it works between the lenses. Now, the fact is, that whether a shutter works between, behind, or before the lenses, there is no perceptible difference in the length of exposure. Theoretically there may be, but practically there is not.

Prints from negatives of horses running at top speed, mile in 1.43, taken straight across field of lens, and not more than fifteen to twenty-five feet away, secured by Mr. Ernest Marx, using our Prosch rapid shutter, Cramer 40 and 50 plates, show perfect sharpness, and are apparently full timed. This demonstrates very short exposures, and also that there are plates quick enough to be had, "but the rub is," how to develop them. Although we have no idea of how Filson's shutter is constructed or works, we feel quite safe in venturing the assertion that at its best it cannot make an exposure one-half, or even one-third, as fast as Mr. Marx used our rapid shutter.

We think if you mention this work of Mr. Marx's, that Messrs. D. Filson & Son will understand right away that the fault is not in the shortness of exposure of the plate, but in the inability to develop such exposed plates. C. Prosch.

Prosch Manufacturing Co., New York.

We think Mr. Prosch correctly explains a "puzzle" that has dumbfounded many a "quick" photographer, and which has done much to "facilitate" the trade in dry-plates—all in the face of our repeated "plea for over-timing," and going slow.—Ed.

FACTS AND FANCIES.

Use of the Zinc Plate in Art.—The photo-lithographers are looking toward zincography as a refuge and substitute for the Bavarian lithographic stone and the wood-cut, and experiments are being made in America, Germany, and England, where pictorial periodicals and newspapers are published, to get the effects of the lithographic pen. The difference between the processes of lithography and zincography, however, is so great that judgment cannot be passed as yet. The great ponderous soapstone reproduces colors drawn on it with a greasy pencil. The zinc can be etched with nitric or muriatic acid, and,

with the aid of a powerful lens, photography called into aid with marvellous effect. The advantages of such a process may be summarized under two heads—economy and convenience—and for daily newspaper pictorial work, where rapidity must be combined with a certain amount of artistic excellence, there can be no doubt of the zinc plate superseding all other methods of reproducing pictures, and the wood-cut is gradually fading away. In the weeklies and monthlies, where the mezzotint can be successfully printed, the wood-cut may endure for some time, but even now some of the photographic pen and ink line-drawing is immeasurably better than the black and white brush-work on wood. The process of biting a plate with acid is, of course, older than Rembrandt, but it has until the last few years been an expensive and laborious art. The hurry of the age demanded its improvement, and soon it will be possible to reproduce great pictures in a few hours, and transfers may be made with great facility and preserved for future use at the nominal expense of the cost of the zinc plates and the necessary storage room.—*Baltimore American.*

The Distance of the Sun.—The following is from the London *Times:* "The results of the American observations of the last transit of Venus, in 1882, have been tabulated and summarized by Professor Harkness. Ten stations of observation had been established in the United States, and 1472 photographs of the transit had been taken. The mean of the results give the parallax as 8.847 min.; that is, the mean distance of the earth from the sun is about 92,385,000 statute miles. Professor Newcomb had, twenty years ago, estimated the parallax at 8.848 min.: and the American astronomers estimate the possible error at not more than 130,000 English miles."

A London writer, whom *The Printer's Circular* quotes, discusses the possibility, as well as the probability, of the trade of the compositor becoming obsolete. He says: "It must not be assumed that I am impressed with the belief that type-setting machines will revolutionize the trade of the compositor. Rightly or wrongly, my belief is that the most threatening danger is apart from them. It, in my opinion, will be found either in the type-writer or photography. The former, as a successful machine, is, if I mistake not, a comparatively new invention; the latter an unexhausted one. If you can express an idea or picture in words, or realize aught needing description by aid of the type-writer, is it improbable that, with further improvements, the writing may be made on or transferred to metal or stone for printing purposes? If attempts in this direction have already been made, I must plead that I have not seen or heard any allusion thereto. With regard to photography and its wonderful progress as an art, 'he who runs may read.' . . . . . In conclusion, let it be understood that my sympathy for the old art of the compositor and those employed in it is by no means exhausted; indeed, it is stronger than ever; but I see, or fancy I see, that it will be partly or wholly superseded. I have no very definite idea as to how the revolution will be accomplished; but I am impressed that it will be by one or the other of the modes indicated, and I have, moreover, a distinct belief that the revolution has already commenced. Type-writing and a process worked through the medium of photography seem the most to be feared, judged by the success they have already reached."

Such impractical nonsense as this is going the rounds of the press. There is not a bit of sense in it. Photography, deft and incisive though it be, and far reaching, cannot take the place of the human hand in many directions, and all it could do toward the nightmare of such correspondents as the above would be to reproduce the fuzzy imperfect results of the type-writer; and be assured (sleepless ones) that no dear public will accept such results in lieu of the neat handiwork of the compositor and his tools.

A correspondent, whose name and section we withhold, writes thus:

"Owing to extreme dullness in business I have given up the gallery, and I am again open for employment. Will you have the

kindness to insert my card for a situation in the next issue of the PHILADELPHIA PHOTOGRAPHER.

"If there are any charges connected with this, let me know what they are and I will remit. Photography is being all torn to pieces, lately, out here. There has been another price war in the city which was subjected to a "cut" last year, about this time. A Mr. —— made cabinets for $1 per dozen, and never finished them. Cabinets are ranging from $1.50 to $7 per dozen, $2 and $2.50 being the prevailing price in most galleries. There are some few getting $4, and only three getting above that. Business is slow here."

[We open our Facts and Fancies columns for the discussion of the reasons why (as our correspondent states) one photographer in a city must be content with $1.50 per dozen for his cabinets while another one secures $7 per dozen? *Who will explain this, another bit of nonsense.*]

AMATEUR photographers are rejoicing over the new developing agent, hydroquinone, which is neither patented nor poisonous, and comes in colorless crystals, easily soluble in water. It is put up in solution in eight- and sixteen-ounce bottles at from 50 to 60 cents, and it is the only perfect one-solution developer. In use you need only flood your negative or positive without regard to perfect immersion or the bubbles that make life a burden with other preparations. You have simply to put it in and wait, and after awhile the picture will come out clear enough even for a magic lantern slide.—*New York Commercial Advertiser.*

The above has been "going the rounds" for some time, and is reprinted here merely as a striking example of the sort of "practical" information which is given currency, and which is liable to mislead the ignorant. *Philadelphia Ledger.*

ISOCHROMATISM.—By means of chlorophyl (green juice of spinach in alcoholic solution) it is possible to render isochromatic the rapid commercial plates. The plate is plunged into the chlorophyl and rapidly dried; it is then agitated for five minutes in water, after which it may be used at once. The plates thus treated are more rapid than the commercial orthochromatic plates, they require no yellow screen, and render better, in general, the value of the colors.—*Moniteur.*

A STRENGTHENER.—The following formula gives excellent results, and if the acetic acid be left out, it no longer exercises any action:

Red Prussiate of Potash at 1 per cent. of Water . .	50 c.c.
Nitrate of Uranium at 1 per cent. of Water . . .	50 "
Crystallizable Acetic Acid .	10 to 20 "

The negative, thoroughly washed, is placed in this solution until it acquires the desired density, then again washed for a quarter of an hour. If the washing is too much prolonged, the density diminishes. This effect is very useful in case the strengthening has been pushed too far.

A VALUABLE daguerrotype is to be cleaned! Not having any experience in this kind of work, I question my friends, the standard books on photography: Vogel's, Lea's, Wilson's, *The Quarter Century*, *The Photo Instructor*, *The Times Annual*, *The International Ditto*, latest *Mosaics*, etc., but their indexes are silent on the subject. Finally, I find an answer to my inquiry in the last November issue of THE PHILADELPHIA PHOTOGRAPHER, page 648, by Mr. Pickerill. Mr. Pickerill says that his advice is worth a horse, but that he will charge only one "long blow." With many thanks, I will give him not a long, but rather a wild blow. He advises, after having washed the daguerrotype, to flow it with a weak solution of cyanide of potash, but he fails to say how weak this solution is to be—in grains, or grammes—and, further, how long this solution of this powerful and destroying agent may be left on the plate. And, finally, should the cleaned daguerrotype not be protected from air and dust by some protective film—were it only by diluted albumen?—KARL KLAUSER.

THERE seems to be a great disposition on the part of photographic writers nowadays

to become relic hunters. Perhaps this is good.

One of the good things that has come out of this relic business has been Mr. Pickerill's recent information given in our pages for the cleaning of daguerrotypes. It will be seen by our current number that some more of the veterans have come to the surface with improved ideas concerning this daguerrotype cleaning. All this is good, and will help those who do not know.

We do not wonder at this disposition to review the past. The current writer is seized with absolute despair when he tries to write anything new, so much has been written and said recently upon modern improvements in photography.

And yet our correspondence informs us every day almost, to a sickening degree, that notwithstanding the amount of material that has been contributed to photographic literature, a great deal of ignorance or indolence still remains. For example, one inquirer this week requests us to inform him how to make distilled water; another one sent us a print which had been developed, and asked us with what material the paper had been sensitized? We can multiply such instances without end.

We hardly know how to account for this disposition to run to the editors of photographic magazines with all sorts of simple inquiries, unless it be that those who are disposed to follow such a practice either have no books, or are too indolent to refer to them if they have them. The editorial columns of our contemporaries all over the world show us that this thoughtless disposition in not a national American one.

We regret to learn that Mr. David Cooper, so well known in almost all American studios, has been compelled, by failing health, to go to Jamaica for the winter. We trust that he will return with renewed strength and vigor for the pursuit of his work as a photographic missionary.

Our esteemed friend and correspondent, Mr. T. C. Hepworth, editor of *The London Camera*, is becoming more and more distinguished as a popular lecturer with the stereopticon. Mr. Hepworth, besides being an able photographer, is distinguished as a literary gentleman of great ability in his own country. We wish him great success in the new work which he has undertaken.

Mr. W. Jerome Harrison, the historian of photography in England, contributed a very interesting paper to the *British Journal* on Porta's description of the first camera.

Editor's Table.

Dr. J. J. Higgins, the distinguished amateur who has contributed so many useful papers to our literature, is a practising physician in our city. He is a prolific inventor as well, and on another page gives evidence again of this fact.

Some lovely bromo-gelatine prints have been received from Mr. Edward Pennock, Philadelphia. They are views on Darby Creek, near where Mr. Walmsley's lovely bit "Up Stream," in our October number, was taken. They all possess that soft, tender quality which so charms the true artist. They have been exposed just right and developed to a nicety.

We do not see how anything can possess more exquisite softness and delicate half-tones than a cabinet portrait of Dr. Somerville, of Philadelphia, made on a Carbutt "flexible," by Mr. F. Gutekunst. In his earliest wet-plate successes (and they number a million) Mr. Gutekunst rarely excelled this fine production. Mr. Gutekunst now looks forward to storing thousands of his gems in a fire-proof, so that if another sad fire attacks his establishment he will not lose so many precious pictures of notables as were destroyed two or three years ago.

"How to Read Character by the Face," or "Illustrated Physiognomy," is the title of a new work by Prof. A. E. Willis (an ex-photographer), 835 Broadway, New York. About 75 pages of useful information are given here for

50 cents. A great many engravings of eyes, ears, noses, and mouths accompany the work. Photographers will find it a helpful work.

Messrs. Smith & Pattison, Chicago, desire us to call the attention of all photographers and dealers in photo supplies to the fact that they not only *own the original patent* on Duplex Rotary Burnishers, but they also own the first and original patent for adjusting the pressure in such machines by means of *one hand-screw* (instead of two as originally used) and that infringements are wholly inexcusable when the fact is borne in mind that they sell Duplex Burnishers that are better than the infringing machines, and just as cheap.

Souvenirs for 1889.—We have sent our annual circular to every reader and subscriber of our magazine we can reach. But as several hundred subscribers are supplied by the news dealers, we are ready to send a copy of our circular to any who apply. We want also to reach everybody interested in art, and will be grateful for any lists of bona-fide names sent us.

Our interests are mutual; the more subscribers we have, the better we can afford to make our magazine, especially pictorially.

Our "Big Offer" is worth considering, but it must be done real soon.

The Sweet, Wallach & Co. (Chicago) catalogue has become so monstrous in its proportions that it is now forwarded by express. Thus came our copy—a very tasteful volume. Its beauty is added to by four full-page lithographs of Hetherington's backgrounds, foregrounds, and with portraits. The whole affair is a fine one, and a credit to all concerned.

From the Rhoads studio, 1800 Frankford Ave., Philadelphia, we have a cabinet of a lovely child holding a doll. It is a true specimen of fine work.

Messrs. Marceau & Power, Indianapolis, Ind., have recently made a number of portraits of President-elect Harrison.

We have been favored with a pamphlet containing the September and October proceedings of the Society of Amateur Photographers of New York.

"Where are our orders of *Mosaics*? People are crying for them. Double our order."—Wilson-Hood-Cheyney Co., Philadelphia.

Negatives of Mr. John Carbutt's new flexible plates have been sent us from various quarters, and some very lovely prints from others have also come.

"A Two-cent Affair—but a Real Grievance!"—Mr. G. G. Rockwood writes us in a personal note as follows:

"I want to speak one word for you and two for myself. I mistrust that you frequently receive requests from the photographic fraternity for information and services without so much as the courtesy of a prepaid envelope or a postage-stamp. I do not believe that either one of us is meaner than the average barbarian, or stingier, but when I offer to send information and receive one or two hundred letters requesting me to send instructions for the 'Triplex' and 'one or two samples' without even a postage stamp enclosed, I protest.

"Now this will give you an opportunity to whip some of your delinquents over my back, or the reverse, by making my grievances known, and some of the friends in the far West and South may take the hint to, at least, send return postage."

Since Mr. Rockwood generously gives his method of making the lovely "Triplex," we think it is a great discourtesy to ask it and not enclose a postage stamp.

The Indianapolis Camera Club at its annual meeting, held Tuesday, Nov. 13th, elected the following officers to serve for one year:

President.—Chas. McBride.

Vice-President.—H. C. Chandler.

Secretary and Treasurer.—Carl H. Lieber.

Executive Committee.—J. T. Harris, R. Steele, H. Kothe.

We have received a prospectus of the Illinois Art School at Rockford, Ill., but not even the slightest clue is given as to who heads it, or who is responsible for it. Not a name appears.

The Acme Water Colors (Mr. T. M. Starr, Manager, 2710 Calumet Ave., Chicago) have become so popular that it is impossible to fill orders under a month or two.

Good News.—The young man injured at Mr. Sam C. Partridge's store, San Francisco, Cal., a few weeks ago, is rapidly recovering. The permanent injury will only be the loss of the end of one of his fingers.

An interesting and life-like picture has come to us from Mr. Jex Bardwell, Detroit, Mich. It is of the veteran and his little grandson and namesake.

A sweet baby picture has arrived to brighten our office from Messrs. Prudden & Dunihue, of Jamestown, N. Y. It is accompanied by a fine cabinet view of their art store and studio building, and by some fine portraits. One of the last is of six young ladies who are peering through breaks in a newspaper. It makes a merry-looking picture. The work is all capital.

Another splendid baby picture of a young miss with lovely curly hair and bright eyes and new slippers, has come to us from Van Ness, Charlotte, N. C. It is a fine example of work. The head particularly is finely managed.

Photographic Mosaics, 1889. — Over three thousand copies were shipped all over our country before *Mosaics* was a day old, and it is on its way to many foreign lands. There is something more in it than we have discovered, for some of the dealers have already doubled their orders and say "everybody is crying for it." If any one can discover why this is so—where the mysterious attraction is, we would be glad to pay a reward for the secret.

One, two, three, four, and five cent American postage stamps will be received at this office in exchange for *Mosaics*, 1889. Some photographers are not convenient to a money order office, and a fifty-cent metal piece of money is not easy to mail, so we agree to take postage stamps from all who prefer to send them. Secure a copy before all are gone.

A New Flash-firer.—As genius marches on invention meets its wants. Messrs. Loeber & Bro., 121 Nassau St., New York, have gone all over the devices made for burning, and directing the light from flash powders, and have placed upon the market at $3.50, a "Repeating Pocket Flash-lamp," which can be carried in, and worked by, one hand. A pneumatic contrivance "fires" the powder over an alcohol flame and the thing is done. A descriptive circular is supplied free, with drawings of the lamp and its component parts.

Mr. Carbutt's flexible plates are to be put to a crucial test in Egypt and Arabia presently. Both Scovill Manufacturing Co. and E. & H. T. Anthony & Co. have recently fitted out a scientific expedition—one for each of the countries named—and their whole dependence is to be placed upon Mr. Carbutt's new flexible plates. The learned gentlemen will have an easier time than we had a few years ago when we dragged nearly a ton of Mr. Carbutt's "B" plates on camel- and mule-back through those same oriental countries. Mr. Carbutt recently showed us some fine flexible negatives of the American Institute Exhibition, made by Chas. Wager Hull, Esq. They are all one could desire and more than one usually gets in such views, for they are entirely free from halation. They are indeed a wonder. Some transparencies shown us by Mr. Carbutt, from flexible negatives, are also exquisite. There is a great future for the flexible plates surely.

Better Let It Go.—An old time subscriber writes: "I enclose $5 for renewal of my subscription to the Philadelphia Photographer for 1889. I suppose I should use the new name, but it is very hard to get rid of the old one as your magazine has become so familiar and so welcome under that title." I hope we may be excused if we still use the old name occasionally.

The *American Annual of Photography and Photographic Times Almanac* for 1889. published by Scovill Manufacturing Co., 423 Broome St., New York, will be ready by the time this reaches our readers. From the advance sheets supplied us, we judge it will far excel its predecessors—in *one* sense it surely will, namely, in the great variety of topics chosen by the generous contributors. Seemingly every one has tried to write concisely and to the point. Scarce a page can be opened to view without the eyes being attracted by some useful thought. We shall review the *Annual* fully in our next and make some excerpts from it. Of course all the old buyers will have it to complete their sets, and if nothing else draws many new ones, the lovely process engravings and prints will. A handsome volume, surely.

A splendid testimonial to the value of the Seed plates will be found in our advertisement department. It appears that these fine plates are used in many of our large observatories, and now they are to go all over the world to serve the astronomers of the world in making a photo-map of the heavens. Wonderful.

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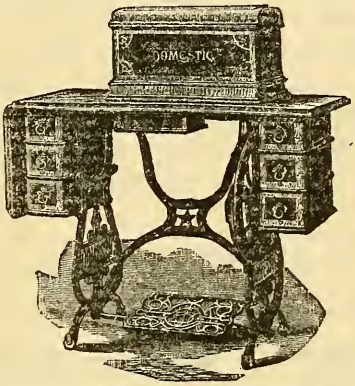
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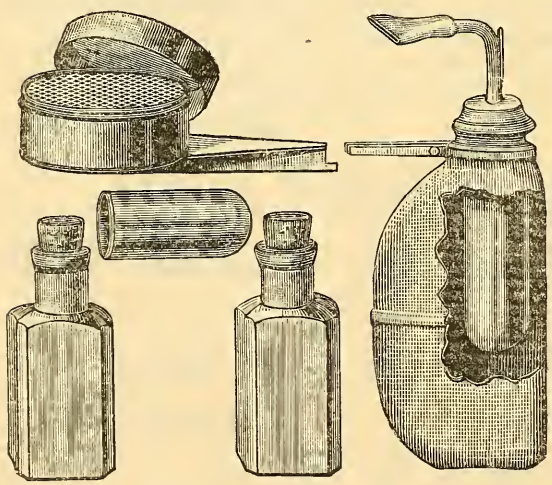
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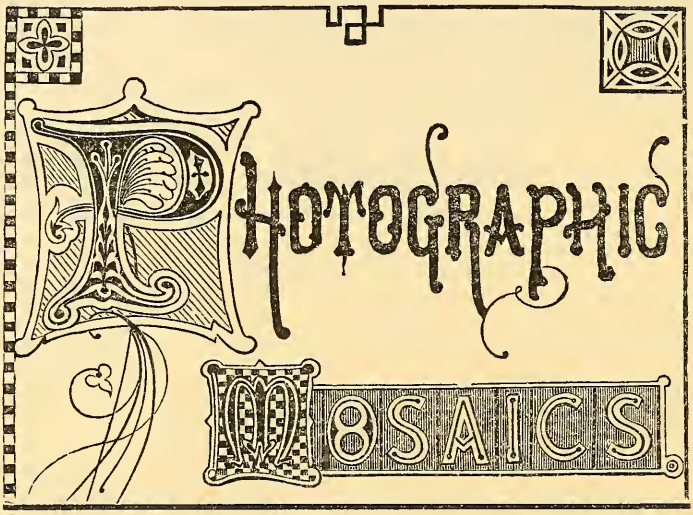
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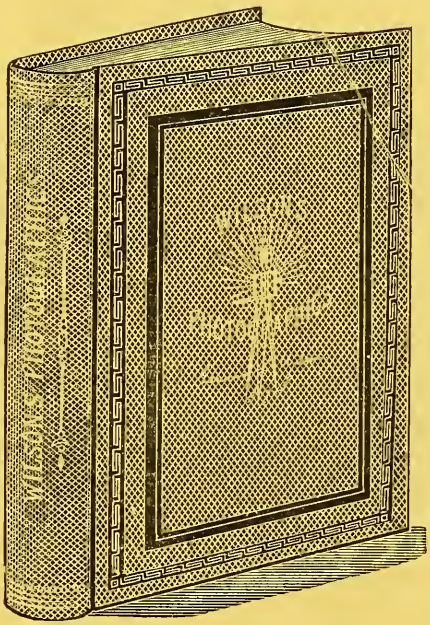
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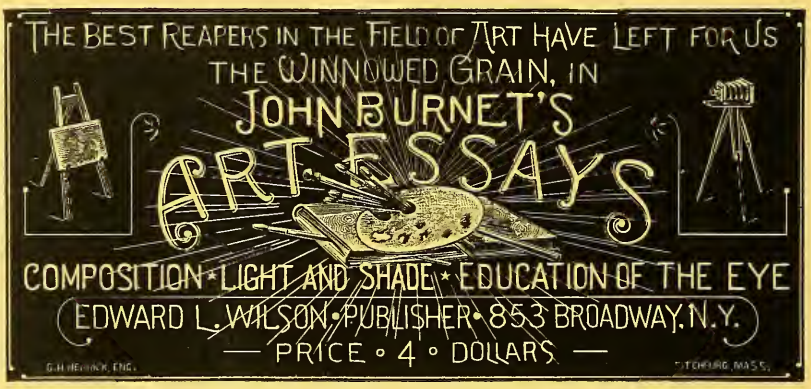
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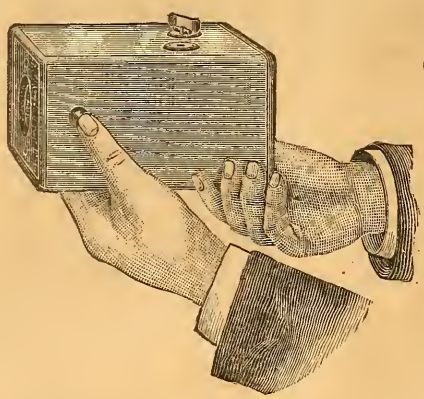
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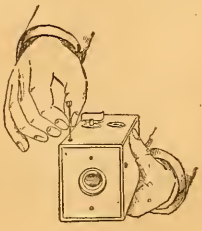
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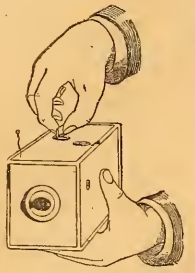
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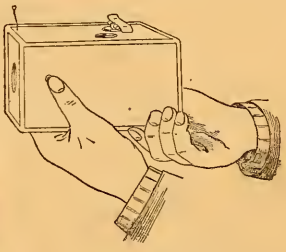
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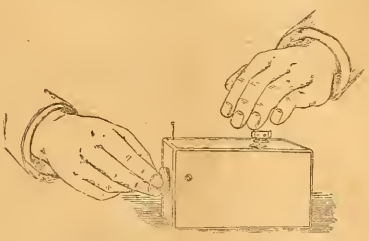


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3. Press the Button.

And so on for **100** Pictures.



Uncapping for Time Exposures.

ANYBODY CAN USE IT!

Size of Camera, 3¼ x 3¾ x 6½ inches.

Weight, 1 lb. 10 ozs.

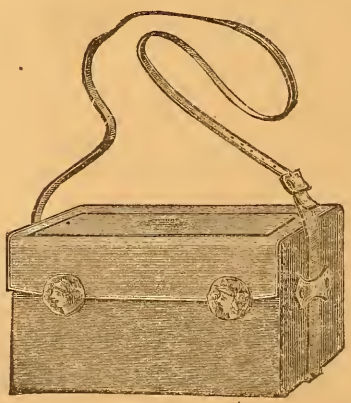
Size of Picture, 2⅝ in diameter.

Price $25. { Includes hand-sewed sole-leather Carrying Case, with shoulder-strap, and film for 100 exposures.

AMATEURS can finish their own negatives or send the roll of exposed films to the factory by mail to have them Developed and Printed.

Price for developing, printing, and mounting 100 Pictures, including spool of 100 films for reloading Camera . . . $10.00

Spool for reloading only . . 2.00



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Eastman Dry Plate & Film Co.,

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